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Federal Control, The Utilities and Holding Companies

With good reason all public service companies are much interested in the impending question of whether both federal and state authority should regulate the utilities, and to what extent this authority should be divided. All companies serving the public have a big stake in the settlement of this issue—and not only the operating companies that furnish electrical, telephone, gas or street car service, but their financial or holding companies as well.

In fact, the holding companies are the storm center of the fight, for the chief argument of the advocates of federal control is that the state commissions have no effective supervision over them at the present time.

Those investigating the situation explain this fairly reasonably by saying that the holding companies control the operating units, and that the latter have to have sufficient rates not only to pay their running expenses but also to meet their contract obligations to the holding concerns.

State commissions can regulate the rates but have no authority over the holding companies which absorb part of the rates. That is why the sponsors of federal supervision insist that Uncle Sam should step in and take a hand in the business.

* * * *

When the National Association of Railroad & Utility Commissioners held its convention at Glacier National Park last month this important question was the subject of an address by Carl D. Jackson, former chairman of the Wisconsin Railroad Commission. Naturally he argued that state regulation is adequate. His comments on the holding company in the utility field are of more than passing interest.

In this connection, he referred to the fact that advocates of federal regulation claim that holding or investment companies make a profit out of their ownership of common stock of public utilities, or from the remuneration paid them by the utilities for service rendered, and that such profit may be unreasonable; and also that state commissions are powerless to interfere.

Another point was that although the states regulate utility service and rates, and may and often do control utility security issues, they cannot effectively control the issuance of holding company securities; that investors in such securities may, therefore, be subject to loss, and that, accordingly, state regulation of utilities is ineffective.

* * * *

In discussing this point Mr. Jackson had this to say: "While there has been much criticism of the holding company, it is clear that holding companies represent an economic movement highly beneficial to our industrial life. Holding companies have existed in the utility field for some years and they have had a considerable growth in recent years. If holding companies have adversely affected the service and rates to consumers, and the effectiveness of state regulation, such a fact should be apparent from a study of public utility service and rates.

"As the state commissions fix the rates and thus control the earnings of operating companies, it would seem as though state authority were as far-reaching as could be asked. It has, however, been seriously maintained that the charges made for service rendered by engineering, supervising or financial agencies controlled by holding companies may be unreasonable and cast an undue burden on the operating utility.

"In respect to these contracts—like all contracts of a public utility, such as those for labor, coal or equipment—state regulation has never sought to become the manager; but in fixing rates the commissions, as a matter of ordinary practice, scrutinize the operating expenses, including managerial contracts, and if they find over-reaching fraud, abuse of discretion or manifestly unfair arrangements, these have not been allowed in rate-fixing."

* * * *

The courts have decreed that state regulation must not interfere with a service company's management, and this has been one of the mainstays of the holding company's relations with the utility. At the same time, this is one of the strong arguments advanced for the intervening of federal authority, for, as Mr. Jackson pointed out, the contracts with the holding company are on the same basis as other operating expense.

"Unless there is over-reaching or mani-

festly unfair arrangement, such contracts (with the holding company) are exclusively within the judgment of the directors and the commission is bound to accept them," he said.

* * * *

More than anything else the friends of federal regulation desire to supervise and control the issuance of securities of holding companies which have been greatly increased as a result of recent utility mergers. On this point Mr. Jackson said:

"If it be alleged that the public is to be protected in the purchase of securities or stocks of holding companies interested in public utilities, it is certain that the public should be protected also in the matter of securities of other holding companies. If a national 'blue sky' law is justified for holding companies of public utility stocks, it is certainly justified for all other holding companies.

So far as the public interest in the sale and service of electricity is concerned, it is the interest of the consumer that is involved and his protection, his whole interest, is bound up in state authority, and nothing more disadvantageous to him could eventuate than to have the federal government destroy that state authority on the pretext of protecting investors in the securities of holding companies. It may or may not be true that the states are powerless to regulate securities of holding companies, but it is not quite clear that the federal government could do so either.

States clearly have the authority to supervise the security issues of operating utilities, and some states have deemed it advisable to do so. However, about one-half of the states have seen no reason to exercise the authority, and most states have 'blue sky' laws to protect investors."

It may be added that if, as Mr. Jackson says, the federal government cannot regulate such security issues, this lack may be supplied at the coming session of Congress when the question will be up for discussion.

* * * *

Business analysts have compiled a summary of the operations of 33 industrial groups for the first six months of 1929 which shows that conditions have been unusually prosperous in the United States this year. The statistics cover 800 representative companies which combined showed a gain of 29.43 per cent for the first six months of this year over the same period in 1928. And last year showed a gain of 17 per cent over 1927.

Three of the 33 groups showed a loss over last year. These were leather, textile and wearing apparel manufacturers. The telephone companies reporting indicated a gain of 6.98 per cent in operating income for the period ending June 30.

As only two other groups reported a smaller increase in revenues, it is plain that the telephone industry cannot be rightfully accused of undue profiteering. Even the railroads showed a gain of nearly 22 per cent in net operating income. Miscellaneous food products showed a gain of 5.39 per cent and automobile and truck manufacturers reported a gain of 5.71 per cent, but this low percentage is accounted for by the fact that the Ford Motor Co. is not included in the figures.

The groups which showed the largest increase are: Iron and steel, 97.58 per cent; copper, 80.69 per cent; oil producing and refining, 79.10 per cent; amusements, 76.95 per cent, and chain groceries, 53.91.

COMING CONVENTIONS.

United States Independent Telephone Association, Stevens Hotel, Chicago, October 22, 23, 24 and 25.

Independent Pioneer Telephone Association of United States, Stevens Hotel, Chicago, October 24.

Illinois Telephone Association, Springfield, Hotel Abraham Lincoln, November 20 and 21.

South Dakota Telephone Association, Watertown, Hotel Lincoln, January 14, 15 and 16.

"Making the Curves Behave" and Why

Trend of the Telephone Business May Be Illustrated by Means of Graphs Showing Curves, Which Are Understood Better Than Figures by Average Stockholder—Charts and Much of Data Presented Based Upon Actual Facts

By H. P. Sentman,
Manager, Fairmont Telephone Co., Fairmont, Minn.

The successful telephone executive, like the successful baseball pitcher, must know his curves. He must learn to control them, so that they will perform faithfully and respond to the remedies required to make them healthy.

Figures are rather dry and monotonous but from figures it is quite easy to construct graphs showing curves which indicate the trend of the telephone business. A simple business curve often presents a picture which is very easily understood by plant men and others who are not familiar with the details of accounting. Charts showing business curves can be used at stockholders' and directors' meetings to illustrate the growth and financial condition of the company.

Curves seem to be understood better than figures by the average stockholder who knows little about the details of the business. The executive who can present such information in an interesting way is generally more appreciated and receives a larger salary than the one who cannot.

Taxes should be estimated in advance so that the balance sheet at the end of the year will show conditions applicable to that year. If the taxes for 1928 are not payable until 1929, a tax reserve should be set up on the 1928 balance sheet and not on the one for 1929.

In many states an annual report is made to the railroad commission or commerce commission. From the duplicate copies of such reports it is quite easy to construct graphic curves showing business conditions back over a ten-year period.

Let us assume the case of a one-exchange telephone company which does not own any toll lines, but which receives a commission from the toll line company for handling the long distance calls. Let us further assume that the plant men make daily work reports showing the work done by the men and automobiles, and the materials used and recovered from plant. The wages of the office force and operators should also be shown under the proper classifications. Suppose we analyze the affairs of this company back over a period of ten years.

Fig. 1 illustrates the four kinds of expense, and it will be seen that this expense has been increasing steadily during the ten years. This increase can be expected, because the number of telephones

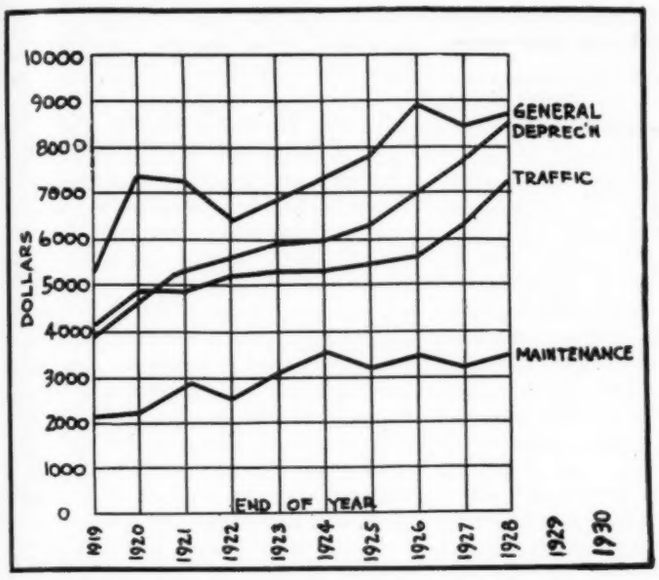


Fig. 1. Chart of Operating Expenses and Their Trend.

has increased from 900 to 1,550 in this period, with a corresponding increase in plant. The total of these expenses is known as the total operating expense. Does the total revenue exceed the total operating expense sufficiently to allow a reasonable net income on the investment?

By referring to Fig. 3 one observes that the band between the "Total Toll and Exchange Revenue" curve and the "Total Operating Expense" curve has been getting wider. This means that the difference between them (net income curve, Fig. 2) has been increasing, and indicates an improved condition in each succeeding year since 1919.

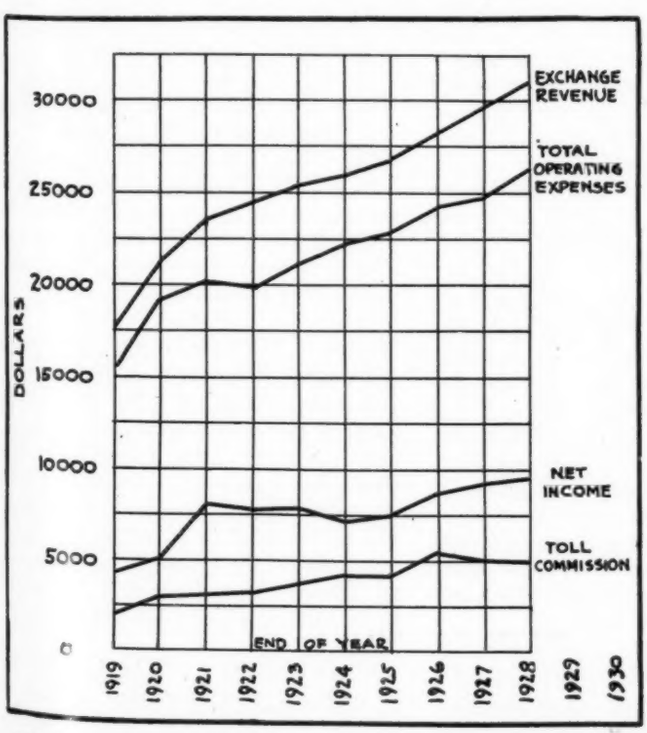
The net income must be compared with the present condition value of the plant to see if the return on the investment has been satisfactory. A worn-out or obsolete plant cannot be expected to earn as much net income as a new and up-to-date plant. The depreciation reserve, as shown on the company's balance sheet, should be deducted from the exchange investment in plant to obtain the present condition value of the plant.

The "Total Toll and Exchange Revenue" in Fig. 3 curve has not been soaring as rapidly as the "Exchange Investment in Plant" curve shown on the same chart. This is not surprising because in constructing new plant much extra conduit, cable and other plant has been placed to take care of the future growth, and extensive new construction will not be required for some time. This fact will cause the "Exchange Investment in Plant" curve to take a more horizontal course in the near future. In the meantime, the steady growth in telephone stations will cause the "Total Toll and Exchange Revenue" curve to continue its steady climb upward.

Again referring to Fig. 2 we discover the "Exchange Revenue" curve taking more of an upward trend than the "Toll Commission" curve. What is the reason for this?

In this case the telephone company furnishes four-party selective service on an extensive scale. The low party-line rate makes telephone service attractive to a class of subscribers who are not large users of long distance service. Furthermore, congestion of local telephone traffic on multi-party lines has a tendency to discourage long distance service from such lines.

Free service to several nearby towns also contributes to a loss of toll revenue at this exchange. This condition is unfavorable and the management of this telephone company should eliminate free service if it wishes to increase its toll revenue. It is



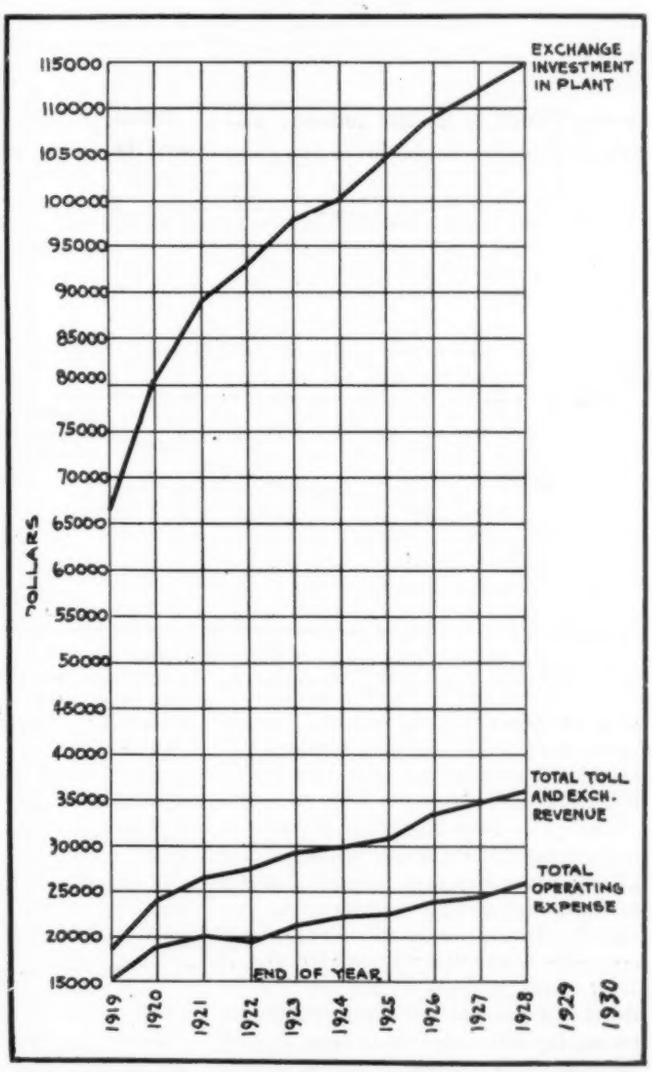


Fig. 2. Curves of Exchange Earnings and Expenses; and Fig. 3. Plant Investment, Revenue and Expense Curves. Study of These Curves Furnishes Material for Future Executive Planning.

essential to keep the net income as large as possible, for out of the net income must come the dividends, and that safety valve of business known as the surplus.

Fig. 4 is interesting because it shows averages per telephone station. In this case the number of telephone stations includes the number of main and extension telephones plus the number of rural switched lines. Each rural switch line adds to the investment, revenue, and expense in the exchange, so it seems fair to consider it the same as if it were an individual line telephone.

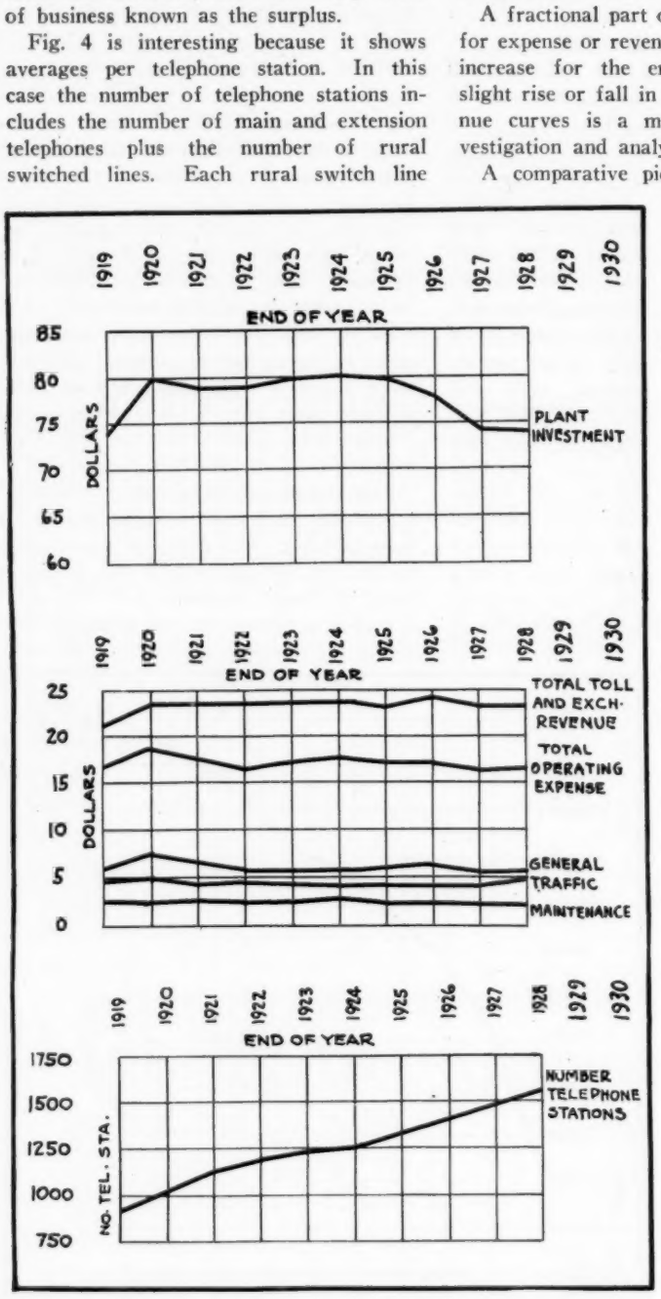


Fig. 4. Per Station Averages. A Small Variation Per Station Means Substantial Increase or Decrease for the Entire Exchange.

The percentage of station increase in ten years (650 telephones, an increase of 72 per cent) has been greater than the percentage of increase in population. This indicates that the average subscriber was served by more telephones in 1928 than in 1919. This increase in stations has reduced the plant investment from $80 per station in 1920 to $74 per station in 1928. With a steady increase in telephone stations and no material increase in underground conduit, cable and pole lines, it is quite certain that the per station "Plant Investment" curve will drop still farther in the near future.

A fractional part of a dollar per station for expense or revenue means a substantial increase for the entire exchange, so a slight rise or fall in the expense and revenue curves is a matter for careful investigation and analysis.

A comparative picture of the various kinds of assets and liabilities, as they existed at the end of the year 1928, is shown in Fig. 5. The total assets must, of course, balance with the total liabilities. The various kinds of plant are shown in dollars and are also shown to percentages of the entire plant. The underground conduit investment is nearly $21,000 or 22 per cent of the entire plant. Underground cable costs lots of money, but in a growing community it proves to be a good investment.

There are many questions one may ask himself. Would a general inspection of telephones, interior wiring and other plant, during slack time, result in an ultimate lessening of maintenance? Could the public be induced to use more toll service? Could directory advertising be sold to better advantage?

The charts submitted with this article refer to make-believe or hypothetical telephone exchange, but much of the data is based upon actual facts.

It is interesting to extend the curves by projection into future years and draw conclusions as to probable conditions in 1935 or 1950. If the courves look favorable, one may wish to invest money in buying more stock; if the future looks dark, one may be tempted to sell out and get into a more profitable enterprise.

It is not my intention to offer advice to expert accountants and statisticians, but somehow or other I enjoy an evening in a comfortable chair looking over my curves and wondering what caused this peak, this hump, or that valley. I like to lay my plans for making the curves behave in such a manner as to improve the business I have chosen for my life work.

Lincoln, Neb., Company Planning Silver Anniversary Celebration.

Officials of the Lincoln Telephone & Telegraph Co. are arranging the details of a silver anniversary celebration that will be held in two parts. One week in the month of October will be set apart during which every man and woman in the employ of the company will be drafted to aid in a campaign intended to convey to everybody in the territory who can be reached, full information about the complete character of the service that is offered in an effort to sell them those services that they can use to their advantage, profit and convenience.

During the first week in December it is planned to have the stockholders and officers celebrate in an elaborate manner, with a dinner as one of the features and to which big figures in the telephone world will be invited and at which demonstrations of modern service-giving facilities will be staged.

Instructions and detailed plans for the drive for new business in October are being prepared for early distribution, and the roles each employe will fill assigned. The company began operations early in 1904, but not until later in the year was it able to meet the demands upon it for complete service in Lincoln, where the start was made. In the years that have followed, the company has been under the direction of Frank H. Woods and associates, and to this continuity of management and the splendid vision and untiring efforts of that group is ascribed the present remarkable position of the company.

More District Meetings of Iowa Association Scheduled.

The Iowa Independent Telephone Association has scheduled district meetings for next week as follows: September 30, Rockwell City; October 1, Riceville; October 2, Portville; October 3, Dyersville, and October 4, Marshalltown.

National Convention's Features Interest Everyone in Industry.

Everyone connected with a telephone plant, no matter in what capacity, is interested in the profitable operation of that plant; therefore, everyone connected with the Independent properties of the country will be interested in attending the coming convention of the United States Independent Telephone Association to be held at the Hotel Stevens, Chicago, October 22 to 25, inclusive.

At this convention will be displayed the latest in telephone apparatus, designed to operate more efficiently and, therefore, more profitably than the older equipment. Among the exhibits will be labor-saving

devices of various kinds connected with the installation and maintenance of the plant.

The program discussions will all have a bearing upon the more profitable operations of the properties. In the traffic division and the accounting division stress will naturally be laid upon more efficient work by the members of those divisions. More efficiency means more profit.

The commercial division will center its attention upon the problem of securing more business with but little investment. One of the problems of the telephone business has always been that in securing a new subscriber the company is required to make an additional investment. The point of saturation for main line subscribers has, of course, not been reached; but it has been so nearly reached that the commercial departments are now able to devote their attention to increasing the number of extension telephones and intercommunicating systems, not only in business institutions but in residences as well. They are also giving thought to the possibilities of developing special services.

All of these topics are going to be discussed at the meetings of the national association next month. The convention should bring representatives of every department of the companies who are interested in developing the business profitably.

Of course, the entertainment and social side of the convention will not be neglected, for the Independent Pioneers are planning a program of entertainment which they think will exceed any that they have hitherto had. Chicago offers unusual attractions this fall. The coming convention will, no doubt, therefore be one not only of profit but also of pleasure.

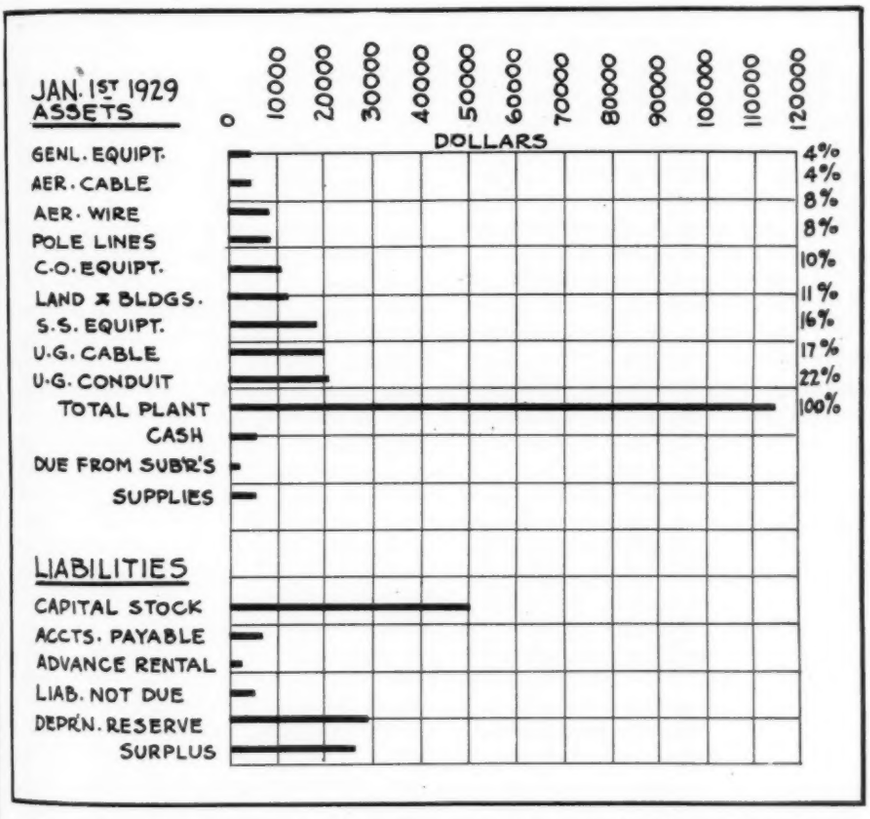


Fig. 5. Comparative Picture of Various Kinds of Assets and Liabilities at End of Year.

Telephone Equipment Used for Technical Classroom Instruction.

The plant department of the Pacific Telephone & Telegraph Co. in the Northern California and Nevada area is rendering valuable assistance in response to requests from high school teachers for telephone equipment suitable for technical classroom instruction purposes.

Recognizing the educational value of such equipment, the San Francisco Bay division plant forces have designed and constructed an interesting and ingenious exhibit consisting of three portable units of equipment, wired, mounted and on panels. The type of equipment that has been furnished, and the layout, are of such simple design as to readily lend themselves to the requirements of classroom study. The equipment will actually operate, "talk," and demonstrate in an understandable way the fundamental principles of telephone operation.

One unit demonstrates the alternating current signaling system. It consists of a small hand generator, a condenser, and a substation ringer. One side of the hand generator and one side of the ringer, are connected to "ground," which, in this case, are connected together by a concealed wire behind the panel.

Another unit demonstrates the common battery talking circuit. It consists of one assembled instrument on the left side of the panel, while on the right side of the panel are mounted a transmitter, hook switch and receiver, induction coil, and condenser. These are wired in proper circuit arrangement and are connected to jacks for convenient use.

The third unit demonstrates a simple form of cord circuit. Suitable dry battery supply has been included behind the panel of this layout to provide both talking and supervisory signal requirements. These consist of a retardation coil, supervisory relays and lamps, a buzzer relay and a buzzer with a cut-out switch, listening keys, and suitable connecting cords terminating on plugs for easy connection to the instruments on the second unit.

Schedules are arranged through the Pacific Telephone & Telegraph Co. employment contacts with the schools which seem most likely to accomplish the best results by making this equipment available for the use of the greatest number of high school teachers in their work with classes covering electrical subjects related to the telephone branch.

Operators Enlarge Vocabulary to Answer Subscribers.

The Southwestern Bell Telephone Co. has authorized its operators to use additional phrases in answering subscribers, with the thought in mind of giving a more personal, intimate service.

"Thank you," the courteous response of the operator for the past few years, will no longer waft over the wires in reply to "Will you ring them again, please?" or "Give me Information, please." Instead, according to company officials, the more natural "Yes, ma'am," "All right, sir," or "Yes, sir, I will try them again," will be used in those cases where "Thank you" is inadequate.

For variation, the old and the new may be combined into "Yes, thank you," or "All right, thank you," while lengthiest of all will be "Thank you, I will try to get them for you."

"Thank you" will probably remain the most common response, it is expected, for in most cases it is the natural thing to say. The operator, however, will use whatever phrase she thinks appropriate, to give her service the more personal touch.

Prices in the Metal Markets.

New York, September 23.—Copper—Steady; electrolytic, spot and futures, 18c. Iron—Steady; No. 2, f. o. b. eastern Pennsylvania, $20.50@21.50; Buffalo, $17.50@18.50; Alabama, $13.00@14.50. Tin—Easy; spot, $45.37; futures, $46.12. Lead—Steady; spot New York, 6.90c; East St. Louis, 6.70@6.75c. Zinc—Steady; East St. Louis, spot and futures, 6.80c. Antimony—8.75c. Quicksilver—$124.00.

Handling Multi-Switch Toll Traffic

Reasons for Not Using Combined Line and Recording Method in Handling Multi-Switch Calls—Speed Only One Phase of Multi-Switch Service Problem—Special Practices—Paper From Traffic Conference of New York Convention

By R. W. Simmons,
General Toll Supervisor, New York Telephone Co., Albany, N. Y.

The past two years have witnessed a radical reduction in the average time required to complete toll board calls, principally because methods have been developed whereby, on a majority of connections, the calling subscriber is held on the line and the initial attempt made immediately. However, if the subscriber is to be held on the line, it is essential that the interval to start of conversation or report of delay be fairly short, as a delay in completing a connection seems doubly long to the calling party when he is at the telephone. Because of this factor, the non-hang-up, or C. L. R. method has proved to be an improvement from the subscriber's standpoint only when applied to direct and one-switch calls.

On multi-switch calls—that is, connections requiring two or more ringdown switches between the originating toll center and the terminating office—the connection time is longer because of the added switch or switches, less satisfactory transmission, and materially increased probability of encountering a no-circuit condition before the terminating office is reached.

Experiments with the application of C. L. R. to such traffic indicated that only about 50 per cent of the connections were established within the three-minute interval, which is the maximum for which it is considered desirable to hold the subscriber on the line.

In addition, at many toll centers the routing information for direct and one-switch points uses up practically all the available bulletin space at the switchboard, and on a multi-switch connection the outward operator is therefore required either to call the route desk or look up the route herself before attempting to proceed with the call. For these reasons it has seemed advisable to dismiss the calling party after recording a multi-switch call.

At the time when all toll board calls were completed by the single ticket method with the subscriber dismissed on every call and an office average speed of perhaps five to eight minutes, the discrepancy of a few minutes which existed between the office average and the service on multi-switch calls was not so apparent to the subscriber.

But under present conditions this discrepancy has been greatly accentuated by a reduction to less than two minutes in the speed of handling of direct and one-switch calls, and by the introduction of the sharp contrast of non-hang up handling of the latter class of traffic.

Furthermore, investigation has brought out that speed is only one phase of the multi-switch service problem, and that improvement in transmission and operating errors is of equal moment, it being found that the percentage of operating errors and cases of unsatisfactory transmission are very much higher than on direct and one-switch traffic.

Weeds in Life's Garden.

Everybody knows the first principles in gardening—weeding, pruning, watering, cultivating, killing off natural enemies, encouraging natural advantages.

Life is equally simple; the rules are known to everyone. Industry, fairness, economy, bring certain good results; idleness, carelessness, discourtesy, unfairness, bring certain bad results.

Why, then, do so many people persist in the wrong plan?

In gardening, no one cultivates weeds.—Thomas Dreier.

As regards service errors, the increased number of operators required to establish and supervise multi-switch connections contributes to the higher proportion of interruptions and cut-offs. Connections to wrong numbers and parties are largely an operating fault resulting from inaccurate work, but on some of the built-up routes unsatisfactory transmission between operators or between operators and distant subscribers is partially responsible for these occurrences.

Data on multi-switch transmission shows that there is room for marked improvement from both an operating and plant standpoint. The operating responsibility is comprised of prompt reporting of circuit trouble, effective use of cord circuit repeaters, and careful following of authorized routings, while the plant difficulties are indicated by the fact that a material proportion of the multi-switch items of traffic have authorized routings with transmission losses high enough so that considerable transmission trouble may be expected over the authorized routes.

It is true that the proportion of calls handled over multi-switch connections averages, in general, only from 2 to 10 per cent of the toll board calls filed, and that improvement in this small proportion of the total may have little effect on the overall office average results.

However, the gain which has been made in the handling of the bulk of the toll traffic has created such a sharp contrast with the service on switched business that the situation carries possibilities of a noticeable public reaction unless we make definite progress toward an improvement. In addition, multi-switch traffic is of a long haul character with a high revenue per message, and an improvement in service would have the advantage of tending to stimulate increased usage.

With the situation as outlined, it is seen that the provision of satisfactory service on multi-switch traffic constitutes a special problem, and it has become apparent that a distinct improvement in the quality of service on this traffic is a necessary development.

To insure an intelligent direction of effort and to measure the progress upon multi-switch service, records of service results must be secured on a routine basis. Service observing is in effect at our larger toll centers, but the observations do not give an adequate picture of multi-switch handling, owing to the small proportion of observations secured on this class of calls.

We shall, therefore, have to rely almost entirely on ticket analyses for indications of service on multi-switch calls, and a routine has been made effective specifying an analysis of three days' tickets each month, except at the smallest toll centers, where the data is prepared quarterly.

The information secured includes the average speed of service, the per cent of calls not completed in 10 and 20 minutes, the per cent conversations with unsatisfactory transmission, and per cent conversations affected by service errors. With this information available, we are in a position to proceed actively toward our objective.

It has been felt that the solution of the problem lies in the improvement of various features of outward, through, and inward service rather than in the development of an operating method entirely different from that previously used.

A number of changes in practice have therefore been developed in the direction of expediting the progress of the call, securing more careful supervision on the part of the operators, and insuring a more thorough observance of certain operations which are essential to satisfactory performance. Following is a discussion of the various special practices which have recently been issued in connection with

the handling of the multi-switch traffic.

As regards speed of service, probably the most important change has been the new practice of holding the toll line for five minutes upon receipt of a report of no-circuit from an intermediate operator, which has resulted in reaching the terminating office without releasing the circuit on 60 to 70 per cent of the connections on which no-circuit is encountered.

Some Changes in Practice.

Also, during the five minutes that a built-up circuit may be held following the receipt of a no-circuit or busy report, the outward operator is required to remain cut in on the circuit continuously in order that she may save the time required for through and inward operators to recall her after having secured the circuit or called line. Further, instead of clearing the connection after miscellaneous reports of delay regarding the called telephone, such as out of order, disconnected, or no telephone, the circuit is held until further directions are obtained from the calling party.

This exception to the regular practice seems desirable because of the difficulty of re-establishing a circuit to the called office, and also because the information furnished on multi-switch calls by the calling subscriber is often less dependable than on shorter haul traffic, with the result that a further use of the circuit is required immediately after receipt of a high proportion of such reports.

Another change, effective at toll centers large enough to have a separate C. L. R. and point-to-point team, has been the recommendation that a multi-switch call be handled at the C. L. R. position at which it was recorded, instead of the ticket being sent to the routing desk and then delivered to a point-to-point operator. The speed advantage of this is apparent and special measures, which will be discussed later, have enabled us to overcome the disadvantage of having these calls handled by operators who have not specialized on the handling of long haul complicated connections to the extent that the point-to-point operators have done.

Recognition of Multi-Switch Calls.

As this method eliminates the forwarding the tickets to the routing desk, equipment arrangements were made so that this information could be obtained over trunks to the routing operator.

If special attention is to be given to multi-switch calls, it is, of course, necessary that a multi-switch call should be recognized as such by the operator. This recognition has been made a joint responsibility of the outward and first intermediate offices.

The outward operator considers as multi-switch any call to a ringdown tributary of a toll center not reached over direct circuits, and on other built-up traffic the first intermediate operator advises the originating operator by preceding her acknowledgment with the phrase "multi-switch," if the office called is not reached over a direct circuit from her office.

As soon as a call is recognized as multi-switch, the code MX is entered on the face of the ticket. From that point the phrase "multi-switch" is used by all operators in giving or acknowledging reports and orders, which greatly reduces the possibility of this feature of the connection being overlooked.

Another important change is comprehended in the monitoring duties which have been assigned to outward, through, and inward operators. The outward operator is now required to monitor each connection for 15 seconds or more after the start of conversation and at frequent intervals thereafter, also to monitor continuously if difficulty is being experienced. This assures prompt action if the subscribers desire a better connection, and the operator's knowledge of unsatisfactory conditions facilitates proper adjustment of charges, thus minimizing dissatisfaction on the part of the subscriber.

The through operators are instructed to remain on the connection, with the key in the monitoring position, until acknowledgment is obtained from the terminating toll center, and thereafter to listen on the connection at intervals of one minute, with the key in the monitoring position, to make sure that conversation is proceeding satisfactorily. The inward operator at the terminating toll center is similarly instructed.

Minimizing Interruptions.

In addition, if the called telephone is slow in answering, the inward operator passes frequent reports that she is still ringing the number, and if a wrong number is reached she cuts into the connection and attempts to reach the correct number, advising the originating operator of her action.

If the originating operator has difficulty in dealing with the called station, the inward operator helps in securing a report. To assist the operators in identifying a multi-switch call during conversation, a fiber sleeve is provided to be placed over the listening key at each office at the time the operators cut out of the connection.

The high percentage of cut-offs and interruptions which have been encountered on multi-switch calls is partially accounted for by the receipt of false cord signals and the operating practice which required the operator to monitor with the key in the talking position.

The latter invited immediate challenge, and the new practice of having the operator listen carefully with the key in the monitoring position should minimize interruptions and cut-offs by operators, except for challenges during pauses in conversation. In addition, with the revised practice the operator should be in a better position to recognize false signals, and advantage may be taken of this to have such signals reported to the plant department.

In an endeavor to improve the transmission on multi-switch calls, a review of existing routes is being carried on continually. In deciding upon authorized routes, length of haul is disregarded so long as transmission may be improved, and the route with the least number of switches is usually adopted irrespective of the amount of back haul which may be involved.

Importance of Building Circuits.

It appears that there is a widespread disregard of routing directions on multi-switch calls, and the outward operators should understand that the most important step in the completion of a call, from a transmission standpoint, is to build up the circuit in accordance with the authorized route. Speed of service cannot be overlooked, but the use of irregular routes has a very adverse effect upon transmission and may react on speed due to increased work time on routes with unsatisfactory transmission.

In this connection we are studying the possibility of quoting more authorized alternate routes on multi-switch calls, and it is hoped that this investigation will disclose possibilities along this line. Another source of transmission difficulties is the tendency to allow equipment or circuits to remain in service after trouble has been experienced, and prompt reporting of trouble by the operating people is an important factor in keeping the plant properly maintained.

Referring to other operating activities which are of assistance in obtaining satisfactory transmission, getting repeaters connected when required is probably the most important. The recently inaugurated practice of requiring outward operators to specify whether or not a repeater is required on all built-up connections has proved very beneficial.

On multi-switch calls the new practices require every call to be transferred to the repeater positions at all intermediate offices so equipped, irrespective of whether the routing directions call for a repeater. This action makes it possible for through operators to connect in a repeater without delay if transmission appears unsatisfactory at any stage of the connection.

Special Supervisory Activities.

Also, the previously mentioned requirement that intermediate and inward operators monitor until the connection is satisfactorily established places these operators in a position readily to change either the cords or toll circuit if such action appears desirable.

Although the activities outlined constitute potential improvement, the latter will not be realized unless the practices are made fully effective. For this reason, special supervisory activities have been specified to insure these practices being followed on as high a proportion as possible of multi-switch calls.

The operators at outward positions are instructed to notify the supervisor when-

ever they make an attempt on a multi-switch call. If the ticket has been recorded by a student or inexperienced operator, the supervisor will transfer the ticket to an experienced operator or give such assistance as is necessary to enable the inexperienced operator to handle the call properly.

The supervisor will determine that an authorized routing is followed, and give assistance in obtaining a circuit in case a no-circuit condition is encountered. She will make sure that the prescribed assistance practices are followed, and will check the transmission so that she will be in a better position to adjust charges if transmission difficulty is encountered.

The central office instructor, or in small offices the employe who performs the duties of a central office instructor, is required to give special attention to the handling of the multi-switch calls that come under her observation, and to stress the special multi-switch operating practices in discussions with the operators.

Turning aside from the activities of the operating people, it might be interesting to mention some of the plans which the engineering department has in mind with regard to the improvement of multi-switch service. In 1929, the establishment of nearly 50 new circuit groups will materially reduce switching and assist transmission on the items of traffic affected, and next year about 30 additional groups will be added to our circuit layout, making a total of 80 new groups in two years.

It is hoped that within three or four years there will be no remaining intrastate routes which require more than two switches between the originating and terminating toll centers. Furthermore, the plans of the transmission engineers contemplate developments that will ultimately result in transmission on multi-switch connections which will be as good as, if not better, than the transmission received on the average one-switch call today.

From the foregoing remarks it is evident that the problem of multi-switch service is being forcibly attacked, and while only a start has as yet been made, it is reasonable to suppose that with the cooperation of everyone concerned, a rapid improvement will be effected in this service.

International Telephone Directory Contains Listings of 27 Countries.

The Danish State Telegraphs, Copenhagen, Denmark, in conjunction with the publishers of the National Telephone Book, have compiled a unique and useful publication in this day of international communication—an all-world telephone book. Annual publication is anticipated.

The International Telephone Book is called "Alt" (all or everything). It contains 12,000 of the most important names, merchants, factories, shipping concerns, hotels, etc., in 27 countries—all concerns interested in international telephone intercourse. The book is arranged both according to branch and names, and directions are given in English, French and German.

BOOK REVIEW.

A B C OF TELEVISION OR SEEING BY RADIO, by Raymond Francis Yates. Published by the Norman W. Henley Publishing Co., New York; 210 pages, 5¾ ins. by 8⅜ ins. with 100 diagrams and illustrations. Price $3.

The past year or so has seen a great public interest in the subject of television, and while research laboratories are experimenting to develop equipment for commercial purposes, Young America is playing with television much as he played with radio some 15 years ago.

This book, the "ABC of Television," has been written for amateurs and experimenters interested in assembling a television receiver that will bring in the "sight" programs which are now being broadcast by some of the stations. Its nine chapters are written in a simple and not highly technical way and give descriptions of television systems with information concerning some of the experiments that may easily be conducted with modest equipment.

The first chapter tells something of the history of television and gives a vision of its future. An explanation of the fundamental principles of television as they are applied in transmitting and receiving is then given, followed by a chapter on the telegraphing of pictures.

Another chapter is given over to photo-electric cells, their operation and construction. In the chapter on amplifying pictures, the theory and practice of the amplification of picture signals are taken up, after which the neon tubes used in television reception are described. The theory of selenium cells with a description of popular types and data concerning their construction is given.

The subject of scanning, which is of great importance in television, is fully discussed and is followed by the presentation of an outline of the synchronizing methods now employed. The two concluding chapters discuss the construction and operation of television transmitters and receivers for home use.

Those interested in the subject of television can obtain an excellent idea of it through perusal of this volume. The information from which the book is compiled was obtained from the laboratories engaged in research work.

HARVEST TIME

By Miss Anne Barnes,

Traveling Chief Operator, Iowa Independent Telephone Association, Des Moines, Iowa

Fall suggests many things of the sort which follow in natural sequence. The feel of fall is in the air. It is beginning to pervade our thoughts. We realize it more when we are driving out on country roads than we do in cities, where the streets are hollowed by the press of feet. In cities, approaching fall is announced by red, brown and golden shop window displays. And we accept fall nonchalantly, or "Let the world slide, let the world go. A fig for a care, and a fig for a woe."—Heywood.

But all easy-going and material thoughts fade away when we ride for a few hours in God's great outdoors; especially in fall, I believe, at the signs of harvest time—reddening apples, yellowing pumpkins, fields of corn changing from shiny green to a rattling, ragged brown.

Particularly do the rattling, ragged brown cornfields show the coming of fall, for they indicate that Jack Frost has stealthily begun to nip around; and they indicate a greater thing—harvest-time.

In one field I saw a sturdy old horse pulling a plow, laying open the ground; and the pulling was done with some visible strain rather than the mettlesome effort of a young horse. The driver was in the fall time of life, too. Neither man nor beast worked with the buoyancy of youth as they did some 15 years ago, no doubt. It was fall time for both. The man's hair was touched with a silvery frostiness on the temples. There was a perceptible stiffness in the pulling muscles of the old plow horse.

Fall time is a time of the year, and a time of life. Both of them come in the fullness of time.

After all, the only thing that really matters is what use we make of time before the harvest-time of life is reached.

"Time wasted is existence, used is life."—Young.

Harvest-time of each succeeding year will always roll around. But some day the sons of the aging farmer will hold those reins and other hoofs will trample his fields.

Between one brown harvest and the next one, many changes take place.

Here and There in Telephone Work

The Magneto Exchange Repairman—Need for Protection.

By JOHN A. BRACKEN.

Often on a hot, sultry summer afternoon, large round woolly clouds are seen to rise and spread out until they cover the sky. The wind soon begins to blow quite strongly toward the cloud-covered area, the clouds generally moving in a direction opposite to the surface wind. As the storm clouds approach, a violent blast of wind, usually called the thunder squall, blows out from the front of the storm. Soon flashes of lightning are seen and thunder is heard.

Since sound travels at about the rate of a mile in five seconds, and the lightning discharge is practically instantaneous, the noise from different parts of the discharge will reach us at different times: and to this and the echoing from clouds or hills, is due the noise which we call thunder.

As the storm comes nearer, the rain begins to fall and for a short time it rains very heavily. Then the clouds begin to roll away and the sky becomes clear, with perhaps a rainbow to heighten the beauty of the clearing landscape.

Thunder storms are caused by hot, moist air rising over certain areas and causing an updrift, which is increased by the inflow and upward movement of air from the surrounding regions. The condensation of the moisture in the rising air quickly forms clouds. These become charged with electricity and as the electrical charge increases, discharges called lightning take place.

Lightning is an oscillatory (swinging backward and forward) discharge; that is, in effect it can be compared to a state of strain established in any body, and when the stress producing that strain is removed, the body returns to a state of equilibrium. But in returning to equilibrium, if the body has mass, its property of inertia causes the point of equilibrium to be passed, and a strain is thereby set up in the opposite direction.

In this way oscillations are caused which would continue indefinitely were it not for the fact that the medium in which they take place possesses the property of viscosity; that is, it offers a resistance to the motion, in virtue of friction or some analogous property. A familiar example is that of the pendulum, whose oscillations gradually cease, owing to the viscosity of the air. In this case, the strain is set up, probably, in the ether, and tends always to a minimum, which exists when the distance separating the pendulum from the earth is a minimum.

If the viscosity of the medium through which the motion takes place is sufficiently great, there will be no oscillation, but the point of equilibrium will be slowly reached and not passed.

A knowledge of the character of oscillatory impulsive electrical discharges leads naturally to a consideration of protection against lightning. Owing to the tendency of lightning to go in a straight line, the telephone equipment most likely to be damaged by it is that having windings or turns of wire—such as switchboard drops, telephone set ringers, receivers, generators, induction coils, etc.—due to the large number of windings and fineness of the wire.

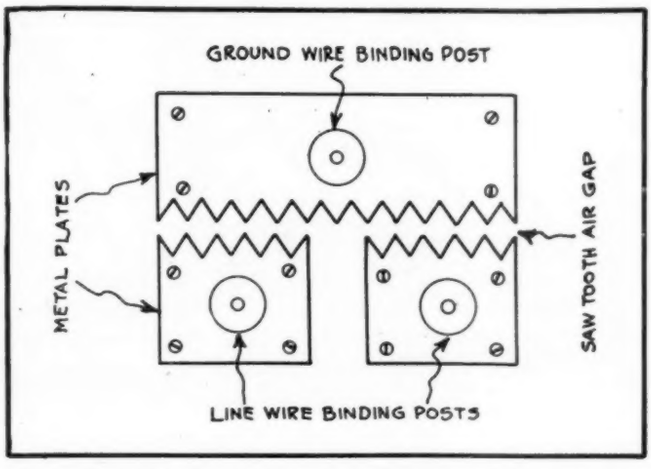


Fig. 1. Simple Form of Early Type Lightning Arrester, Known as the "Saw-Tooth" Arrester.

The total quantity of electricity in a lightning discharge is not, however, very large; but as the E. M. F. is high the energy is comparatively great and, as the duration of the discharge is short, the power is very high. If a small portion of a lightning discharge happens to flow through a telephone set or other equipment, those parts connected directly to the line at the time of the discharge, will in all probability be destroyed, either by having their windings burned out, or by having the insulation punctured by the extremely high E. M. F.

Although telephone lines offer a good conducting path for lightning discharges, they are not as a rule, an easy and direct path between the clouds and the earth. This is owing to the horizontal position of the line wires, which usually receive only a portion of the discharge that finds its way to or from the earth over several poles nearest the main path of the lightning discharge.

The fact that lightning has a tendency to arc or jump across insulation, especially air spaces, developed the principle of protective devices known as lightning arresters. These are universally used to protect telephone equipment from lightning discharges upon the line wires by providing for such discharges a direct path to the earth. An old form of lightning arrester or protector commonly used in the past is a device called a saw-tooth arrester, Fig. 1. This arrester consists of three pieces of metal, slightly separated from one another and mounted on top of the telephone set.

Lightning arresters of the saw-tooth type depend for their operation on the violence of the lightning discharge; that is, on the great impedance (opposition to current flow) which is presented to a rapidly-oscillating high E. M. F. discharge. When such discharges lack this violence, they may readily produce more damage in the telephone set—at least so far as the set apparatus is concerned—than the more violent discharges, for whenever the impedance of the line becomes so small from any cause that a part of the discharge can flow through ringer, receiver, or other coils of wire in the telephone set, such currents may really be of sufficient strength to burn or otherwise destroy the coils.

All exposed telephone circuits should be protected against all sources of excessive voltage and currents as follows: (1) lightning; (2) high voltage power circuits; (3) low voltage power circuits. The low voltage power or electric light currents may cause damage by (1) eating; and (2) electrolytic action.

Will Use Films Instead of Records in Radio Broadcasting.

Broadcasting from reels of film instead of phonograph records will be tested this winter by the Columbia Broadcasting System, according to a representative of the company. Paramount Famous Lasky Corp. recently acquired a half-interest in the Columbia system and it will handle the recording of music and speeches on films.

It was pointed out that the reels of radio program can be sent to the broadcasting stations for use whenever the management desires. A device at the radio studio would reproduce the program over the microphone.

The plan had a preliminary test recently

when Paramount recorded speeches by film stars in Hollywood and later broadcast to the Byrd Antarctic Expedition from Atlantic City. Commander Byrd's favorable report of the clarity of the program is said to have developed the idea of using films in regular broadcasting.

By sending duplicate films to each station for routine programs, the company would save wire tolls now paid when the radio transmitters are linked together.

The Columbia representative said that the film is far more economical and easier to handle than wax records as tested at several stations. He pointed out that a wax record often requires several recordings before it is good enough to put on the air, and if even a slight mistake occurs near the end of the recording it must all be done over again. On the other hand, if an error occurs in the reel, the film can be cut and fixed at that point and repetition of the entire performance is not necessary.

The radio law of the United States stipulates that mechanical music and talks must be announced as such, but the film people are not adverse to this because, they explain, it affords a natural avenue for advertising on the air when the announcer declares that "this program is recorded and furnished to you by a Paramount film."

"Films are expected to play a greater part in radio," said the Columbia-Paramount representative. "Sound recorded on a film can be broadcast with such clarity that the listener cannot detect whether it is an original performance or a film reproduction. And the next step will be television, when films will, no doubt, record plays and scenes in action for later appearance on the silver screens of radio throughout the world."

Novel Telephone Cable Barge Operating on San Francisco Bay.

The cable barge, Pacific, costing approximately $80,000, which is operated on San Francisco Bay by the Pacific Telephone & Telegraph Co., has the cable reel placed one-half above deck and one-half below, for the purpose of lowering the center of gravity and thus making the barge more stable and less likely to roll from side to side in rough weather.

The cable reel, operated by a reversible steam engine mounted on the deck, is controlled by four separate brakes, so that there is never a possibility of the cable getting away and slipping off into the water—a calamity well worth guarding against. The barge is capable of handling larger cables than are now in use and is, therefore, fortified against future requirements and contingencies.

The Pacific carries a crew consisting of the foreman, watchman, engineer, a cable splicer and helper, a cable tester, cook and eight seamen. They are all amply provided for in the way of living quarters. The messroom seats 14 people at a time, the officers' quarters accommodate five, and the crew's 15. The deck house is equipped with every sanitary convenience, with washrooms, shower baths, and drinking fountains on both decks.

The engine room, below decks, has two gasoline motors, one driving an electric light generator and the other a welding generator. The barge is lighted and heated by electricity in such a manner that should one circuit get out of order, the others would operate as usual, pending repairs. The current from either generator may be used for heating or lighting, in case of an emergency. For night work the barge deck is illuminated by four big floodlights mounted on the derrick mast. The officers' quarters are heated by "black heat heaters," which do not glow and are responsible for a considerable reduction in fire hazards.

The machine shop, adjacent to the engine room, is equipped with apparatus and supplies to meet every requirement of the barge and cable layers. The cable testing room below decks is fully equipped with instruments and circuits for testing cable as it is laid. A slip-ring arrangement on one end of the cable reel shaft carries three pairs of conductors to the testing room and is protected by a triple seal against oil or water reaching the contact surfaces. With this device it is possible to test the cable when laying.

Steam power on the cable barge is provided by a boiler, mounted on the deck. Steam is the source of power on the vessel, and there are several engines. The capstan, used for mooring the barge to docks, is run by a steam engine, as is the fire pump below decks, which is intended for fire protection and is also manifolded to pump out any of the four watertight compartments in the barge hull. This is a very useful safety feature, as in case of collision and the damaging of one compartment, the vessel would not sink.

Another steam pump is placed below decks. Automatically controlled, it sends fresh water from the 4,500-gallon capacity tanks to all parts of the barge galley, drinking fountains, and sanitary purposes. A reserve tank of 1,100 gallons provides against emergencies.

The barge has a length of 100 feet over all, a beam or width of 40 feet, and a depth of 12 feet. Equipped with a derrick of 25 tons capacity, mounted on the deck, she can lift and manage prodigiously heavy loads of cable. The steam engine furnishing derrick power has four drums and possesses power proportionate to the strength of the derrick. The cable reel is built of steel and has a capacity of 16,000 feet of cable.

The Cable Barge, Pacific, Operated in San Francisco Bay by Pacific Telephone & Telegraph Co., Has Cable Reel One-half Above Deck and One-half Below.

Wisconsin Bell Installs 150,000th Telephone in Milwaukee.

The 150,000th telephone in the city of Milwaukee, Wis., was recently installed, being placed in the Clybourn street branch of the Public Library. In the past 40 years the telephone has shown a steady growth so that today, Milwaukee ranks high among the larger cities of the country in telephone development.

In 1890, there were but 2,300 telephones in the city. In 1900, this figure had increased to 7,900 and in 1910 to 35,000. In 1920, a total of 80,500 was attained, and since that date the growth has been to a greater extent than ever before.

By 1925, there were 120,000 telephones, and this year, the 150,000th mark was reached.

Benefits of Selling Telephone Service

Selling Program Inaugurated by Southwestern Bell Telephone Co. in Oklahoma Within Last Few Years—Intensive Program Carried on During 1928—Results Obtained Therefrom—Address Given at Convention of Oklahoma Association

By R. J. Benzel,

General Manager, Southwestern Bell Telephone Co., Oklahoma City, Okla.

It has been some time since the telephone industry, particularly in such a fast growing state as Oklahoma, has had identified with it aggressive selling. Due to postwar conditions it has taken the telephone business some years to get its plant and facilities in position to handle satisfactorily and quickly the applications for service from its customers. Consequently, with the demand greater than the supply for a period of years, there was, in general, no place in the business for aggressive selling designed to secure new customers.

In the last few years, however, the Southwestern Bell Telephone Co. in Oklahoma, realizing that many are the benefits to be derived both to the company and to the customer from a complete selling plan, inaugurated its selling program.

This selling program has gained momentum each year, and by the middle of 1928 our experience indicated that it would be well to introduce a more intensive and extensive selling program. This decision was reached simultaneously, I think, by the entire telephone industry of the United States, and it is my purpose in this discussion to outline some of the results of our sales work in 1928, and those that we intend to accomplish by active selling in the future.

Reasons for Selling Service.

In the first place, why are we selling? Why should this business, which has carried on very satisfactorily in the past few years without a sales consciousness, develop at once an intense desire to sell? To me there are fundamental reasons why the telephone business should be a selling business.

First, only through real selling on the part of all employes, and only through a development in our employes of a real sales consciousness, can we hope to approach the proper relation between the customer and the company.

This idea has two aspects: It is only through a real desire on the part of all of our employes to furnish each of our customers the kind and quantity of telephone service that he requires that we can improve to the ultimate the employes' relation with the public.

In other words, employes who are filled with a real sales consciousness never irritate or otherwise disturb our customers, and, thus, will never contribute to bad public relations.

The second aspect is this: Through an active and organized selling program designed to provide each of our customers with adequate and convenient telephone service we expect to improve to the ultimate degree our customer's opinion of the telephone company—thus, again, improving our relations.

A satisfied customer is the biggest asset that any business has, and we feel that through selling or fitting our service to the needs of our subscribers we realize greater satisfaction on the part of our customers.

Balanced Telephone Development.

The second primary reason for selling is to reach a full and balanced telephone development in our territory. By a full development I mean that every family and every business firm that should have telephone service will have it; and by a balanced development such service will be of the kind and quantity best fitted to the needs of the individual customer. Only with a full and balanced development can the service be furnished at the lowest rates consistent with financial safety.

We have found that by keeping these two motives or ideas in mind we eliminate from the selling job the dangerous phases that are naturally incorporated in an intensive selling program. We find that they keep our people from overselling one or more of the different classes of service, and constitute a very fine balance wheel on the efforts of the sales force.

In our selling work we have divided the job into four or five major projects.

The first can well be called a program to realize adequate telephone service for each of our business firms. This work is largely a service work, and in following it our employes, specially trained to make service studies and recommend adequate service arrangements, have interviewed in the past year a large number of our business subscribers, and, incidentally, have made remarkable progress in selling the proper kind of service to each individual customer.

Second Major Project.

In some cases the sale or rearrangement represented a loss of revenue to the telephone company, but in the overall picture the increased revenue attributable to this effort is very satisfactory.

The second major project is that of converting our non-users to the telephone idea. Some of the possibilities of such an effort on the part of the telephone companies of the state can be well realized if it is borne in mind that in Oklahoma there are 250,000 families who do not have service. For carrying on this work we use house-to-house canvassers who have been specially trained to overcome the usual objections to telephone service on the part of the non-user, and to point out in their sales work all of the advantages of telephone service and its comparatively low cost.

This represents one of the most important sales efforts that we can carry on to realize a full telephone development, as each new station connected to the telephone system makes every telephone in the system more valuable to each customer.

The third most important sales job in our exchanges is the sale of convenient and adequate telephone service in the high class home. In very few cases is that group of our customers who occupy the higher class homes in our exchanges receiving a telephone service comparable in degree as to convenience with other household comforts.

In very few cases do we find that the house of ten rooms has more than three telephone stations, and there are many cases of two-story houses in which there is only one main station—usually located in a very inconvenient place, such as the stair landing.

Extensions in Homes.

In an examination of this market we are convinced that the fine home presents a real opportunity for the telephone company to increase its revenue, and, at the same time, give the customer the kind and quantity of telephone service that he should have.

In some specific instances in handling this problem we have installed telephone stations, either jack outlets or permanently connected extensions, in every room of a fine home except the bathroom, and we know of cases in the territory where the customer has insisted upon a telephone extension in the bathroom.

We handle this matter on the same basis that we handle the business subscriber, namely, each home is subjected to a thorough service examination and equipment arrangements recommended that will fit in to the design of the house and to the customer's individual needs. I can't say that in all cases have our recommendations been accepted; however, such a substantial number of them have been accepted in their entirety that we are devoting a large amount of time in 1929 to this problem.

In connection with this the Bell system

is designing equipment in style and type which will more nearly meet the requirements of our customers who live in fine homes. I am referring to hand sets in colors; sets in old brass or statuary bronze finish, smaller subsets, new service plans in intercommunicating equipment, and small dial P. B. X. boards with a capacity of 15 stations. These new equipment arrangements are being designed primarily so that the telephone equipment in the home will be consistent with the other house furnishings.

There is a market for the sale of additional service, such as extensions, plug and jack equipment, and even intercommunicating systems in practically all towns. In our experience sales have been made of this type of equipment in some of the smallest size towns. While it is true that there is not as great a number of such prospects in the smaller towns, yet I think you would be agreeably surprised at the results accomplished by real sales efforts on this class of service.

Probably the fourth most important sales job is that of improving the per cent of local calls completed. I shall not dwell on the procedure to be followed in this work as the condition does not exist in the small towns to any appreciable extent, but suffice it to say that in our larger towns we obtain a record from the traffic department of the telephone numbers that are frequently busy during the studied period, say three to six times a day for a period of five days.

The sales people then take this report and interview the subscribers with a view of selling them sufficient additional facilities that would eliminate the excessive busy calls. A subscriber is usually very anxious to relieve the condition, as he realizes it is irritating to his customers and also shuts out business. Regrading from party line to individual line also reduces busy calls.

Also a report of telephones that don't answer an unusually large number of times is made, and the sales force interviews these subscribers with a view of relocating the equipment, selling extensions, extension bells or gongs, or whatever would improve the condition.

The last, and by no means the least important, phase of our sales work has been that of toll sales. We are convinced that the present telephone user, although he is gradually becoming long distance minded, could use additional long distance service very profitably.

Consequently we have been extremely active during the past year in selling the long distance idea both to the business customer from the business standpoint and to the residence customer for social use. We are conducting some rather interesting experiments in connection with the sale of additional toll service to residence customers.

These experiments are based largely upon the use of direct mail advertising, and while they have not been completed to a point that accurate measurement of results is possible, the indications are that such a sales program, if coordinated with personal interviews, is very effective in increasing the amount of toll business originating at the average residence.

We have introduced the key town sales plan to a large number of our business customers, furnishing them with Bell system credit cards and explaining to them the benefits both from convenience and cost that can be derived from the use by salesmen of long distance interviews with their customers.

The success of our toll sales work in 1928 is somewhat reflected by the fact that the average increase in toll business from our subscribers who were interviewed during the year with respect to toll service was 19 per cent over the previous year, while the increase of those business customers who were not interviewed averaged only 8 per cent.

In carrying out this aggressive sales work in 1928 my company in Oklahoma made a total of 71,500 planned sales interviews. In addition to this there were approximately 24,000 telephone contacts; 10,000 stations were sold; and the annual revenue increase due to sales efforts amounted to approximately $320,000, not including revenue from toll sales work or special contract service such as telephone-typewriter, etc.

A total of over 1,000 telephone service studies were made, reflecting an annual revenue increase per study of approximately $40, and eight complete or formal service studies on large P. B. X. boards were completed. A total of 5,000 reports on excessively busy lines were handled, about 40 per cent of which resulted in sales of additional equipment, additional lines, or rearrangements.

Our company has developed what we call a "Prospect Sales Slip." A number of these slips are furnished to employes in the company, such as operators, troublemen, linemen, clerks, and others.

Wherever an employe thinks it possible that a sale could be made to a friend or neighbor he fills out the slip and it is immediately forwarded to the business office, where it reaches the sales force and efforts are made to sell the prospect. These slips then are returned with notation as to whether or not the sale has been effected, and the employe who sent the prospect slip in is notified of the results.

Where sales are made, that information, of course, is very encouraging to the employes, and naturally leads to further efforts on their part for additional prospects. The commercial people received from the other departments of the company about 6,000 prospect slips, 50 per cent of which resulted in the sale of the service suggested.

Approximately 100 studies were made in fine homes with a very high per cent of sales results.

In carrying on our sales program we follow the quota system very closely. An amount of station gain, sales contacts, service studies, etc., is assigned for each exchange. Based upon the quotas the expected results are projected and the organization built to handle the job on that basis.

As considerable study and thought goes into the making of the quotas, failure to realize is considered an extremely serious thing by the employe concerned, and every effort is put forth to make the quota.

Our sales program for 1929 is approximately double that of 1928, and as we are becoming more skillful in selling and as our plant is being designed and provided with the sales idea in mind, we feel that our 1930 sales quota will be large.

In other words, while our experience in connection with selling in the telephone business is not particularly extensive, what we have is sufficient to indicate that we must of necessity at this time enter into a thoroughly planned and organized selling effort.

In conclusion, I think we of the telephone industry will find that a continuous active selling effort will be a healthy thing for the business. It will create in the minds of our customers the feeling that we appreciate their business and are anxious to serve them.

It will establish contacts between customer and employe that will improve immeasurably our public relations. It will create in the minds of our employes that desire to know and to serve the public in a satisfactory manner, and will, therefore, broaden the employes' knowledge of the business, making a more interested and better satisfied employe, which will further promote that much desired spirit of co-operation among all employes.

Finally, it will greatly improve the financial condition of the business, and in many cases will convert a small exchange from a losing property to one that will pay a fair return, and in all exchanges the financial condition will be so improved that if any increased rates are necessary the increase will not be as great as if no selling efforts had been put forth.

THINKING AND DOING.

People who have no time, don't think. The more you think, the more time you have.

The more alive you are, the more eagerly interested you are in what you're doing, the less sleep you need.

To accomplish things, you must first feel that you are capable of accomplishing them. To achieve, the thing and the time and your mind and yourself, all have to be right.—Henry Ford.

News Items About Europe's Telephones

Fiftieth Anniversary of Establishment of Telephone Exchange in London Celebrated—Description of First Switchboard and Exchange—Telephone in Milan Cathedral Dome—Germany Has Roadside Telephones—Miscellaneous Items

By TELEPHONY'S Special London Correspondent

London has been celebrating its telephone jubilee. Fifty years ago—in August, 1879—the first telephone exchange in London was opened by the Telephone Company, Ltd. It was established with just over half-a-dozen subscribers and was housed at 36 Coleman street, E. C.—the first authentic home of the public telephone in London.

London's Telephone Jubilee.

The switchboard first used at Coleman street was imported from America and was what was known as the Williams type. It consisted of an upright connecting board with two separate tables in front for the operators.

The venture soon attained popularity. Before the end of the year two further exchanges, one at Leadenhall House and the other at 3 Palace Chambers, Westminster, were opened, and by the following January there were some 200 subscribers.

Actually, the honor of possessing the first telephone exchange opened in Great Britain—though not, strictly speaking, a public one—goes to Scotland. The "Glasgow Medical Telephone Exchange," confined, as the name implies, to doctors, chemists, hospitals, and similar interests, was opened in March of the same year. It was quickly followed in Glasgow by "Legal," "Stockbrokers," and "Commercial" exchanges, all at first independent of one another, although later means were afforded for intercommunication between the four groups.

Manchester, Liverpool, and Edinburgh all opened exchanges in October, 1879; Birmingham followed in December of the same year.

The opening of the London exchange, an epoch-marking event, attracted so little attention at the time that there is no record of the exact date. This lack of record is, of course, partly attributable to the fact that our early telephone services were originally run by small companies whose businesses often passed through several hands before being absorbed by the National Telephone Co., and, eventually, by the Post Office.

It is not surprising to learn that the cautious Post Office turned down the telephone on the ground that "its possible use is very limited." This complacent attitude of the officials—not entirely unknown in modern times—was not shared in higher quarters.

Queen Victoria took a great interest in the invention. A special demonstration of his invention was given for her benefit by Alexander Graham Bell at Osborne. Osborne House and a cottage in the grounds were connected, and conversation was successfully carried on between them. The Queen was highly delighted and wished to keep the instruments utilized in the demonstation for her own use.

This was awkward for Professor Bell, who also wished to keep them for further demonstrations, yet was naturally chary of refusing the royal request. The difficulty was got over by his suggesting that instruments more worthy of such a high destiny should be forthwith made and forwarded to Her Majesty, who acquiesced in the arrangement.

Lord Hayter, now chairman of Chubb & Sons, the safe makers, was an early subscriber; his firm's telephone number was "London 9." He tells in the "Daily Express" how, whenever he spoke on the telephone, a wondering crowd used to assemble round the instrument. Before the end of the year he was pioneering as chairman of the Birmingham Telephone Co.

"Our chief difficulty in the early days," he says, "was the question of running wires over people's houses. Many objected, and sometimes we laid our wires at night without asking permission, and nobody noticed. Workmen were not trained to climb up poles in those days and fix the wire, so we used sailors who had experience of similar work in the great tea clippers and sailing ships which then carried much of our trade. Messrs. G. & R. Dewhurst were, I believe, the first people to have a private line between London and Manchester, where their head offices are. By the time the National Telephone Co. was formed, there must have been thousands of subscribers to telephone service in London alone."

Telephone in Cathedral Dome.

A public telephone has been installed in the dome of Milan Cathedral for the use of visitors wishing to order carriages to await them at the cathedral door.

This enterprising innovation typifies the changed spirit of the Italian telephone service, since, some four years ago, the local systems were transferred from state ownership to five private companies. These companies have increased the number of telephones in their various districts at rates varying from 43 per cent to 108 per cent.

The city of Milan has at present 802 public telephones as compared with 184 two years ago, and it is expected that before the end of the year this number will be increased to 2,000. Every theater and picture palace has its public telephone and booths have been freely installed in the suburbs.

Special taxicab services have been installed in Milan, Genoa and Turin, and are being installed in other towns.

The automatic system has been installed in all large towns in Italy, and its installation in smaller centers is proceeding.

Telephone in Every Home.

The installation of a telephone in every home at a charge of £2 (10 dollars) a year as a step towards curing unemployment was a suggestion placed before the Postmaster General recently by a Bootle (Liverpool) resident.

The Postmaster General has rejected the scheme on the ground that it would lead to loss of revenue.

Roadside Telephones for Germany.

German roads are to be equipped with telephones every half-mile, so that drivers of cars which meet with accidents along the road or are in need of repair can easily get assistance.

This service has been initiated by the "Help for Motor Cars Company," which has been established by the German car industry with a number of clubs. The telephones will be installed in a box attached to a white mast. Membership of the company with ownership of a key to the boxes is open to anybody for the equivalent of three dollars.

St. Paul's Strikes in Sydney.

With the ease and freedom of an ordinary telephone conversation between two London residents, two people in Sydney, Australia, and London were able the other day to chat through the agency of a wireless telephone.

The call made from one side of the globe to the other was put into operation quite simply. An official at the London G. P. O. was plugged in by the trunk service to the beam wireless station at Rugby, and thence by short wave transmission to Sydney, 13,000 miles away. Ordinary office telephones were used.

After a plainly heard conversation, the listener at the Sydney end clearly heard a series of notes like the twanging of a harp string. It was St. Paul's striking eight.

"Everything indicated," said Lieut.-Col. Angwin (radio section, G. P. O.) that the test was a great success. We hope to be able to demonstrate its commercial possibilities shortly."

London Automatic Exchanges Opened

New "Metropolitan" and "National" Strowger Automatic Telephone Exchanges Bring the Total Number of London's Automatic Exchanges to 17—Fine New Building Ultimately to Accommodate Equipment Serving 30,000 Subscribers

By J. W. Catchpole

Situated in Wood street, Cheapside, London, England, is a fine new multi-story building, which will ultimately accommodate Strowger automatic telephone exchange equipment serving no less than 30,000 telephone subscribers in that congested city area. The building has been designed to house "Metropolitan," "National" and "Empire" exchanges, each of 10,000 lines capacity but at present equipment for the two first-named only is in situ, having been cut into public service on August 31 and September 7, respectively.

The opening of these two new exchanges brings the total of London's Strowger automatic telephone centers up to 17, and the latest achievement is unique as marking the partial completion of what will be the largest Strowger automatic telephone exchange in London.

The new building, comprising ground floor, basement and six upper floors, occupies the site of one of the old city churches, St. Olaf's, which was destroyed in the Great Fire of London (1666) and of which the burial ground still remains, in close proximity, marked by a few weather-worn headstones.

The 1,000-pair cables carrying the subscribers' lines and junction circuits to other exchanges, enter the building by way of a nine-foot diameter tunnel, 45 feet below street level, access to which is obtained through an inclined shaft with a stone stairway leading down the center.

The ground floor is mainly occupied by the battery room, equipped with four main batteries, two of each exchange, all comprising 25 cells per battery.

Those for serving Metropolitan exchange, Nos. 1 and 2, were supplied by the D. P. Battery Co., and are of 10,000 ampere-hour capacity when discharged at the 9-hour rate, while the counter E. M. F. cells for P. B. X. service are rated to withstand a current of 200 amperes continuously.

Batteries Nos. 3 and 4 serving National exchange, are of Alton Battery Co. manufacture and of similar capacity, the counter cells in this case being designed to withstand 220 amperes discharge.

The ampere-hour efficiency of all four batteries is 90 per cent, and the watt-hour efficiency, 75 per cent. The maximum discharge rate is of the order of 5,000 amperes for one hour.

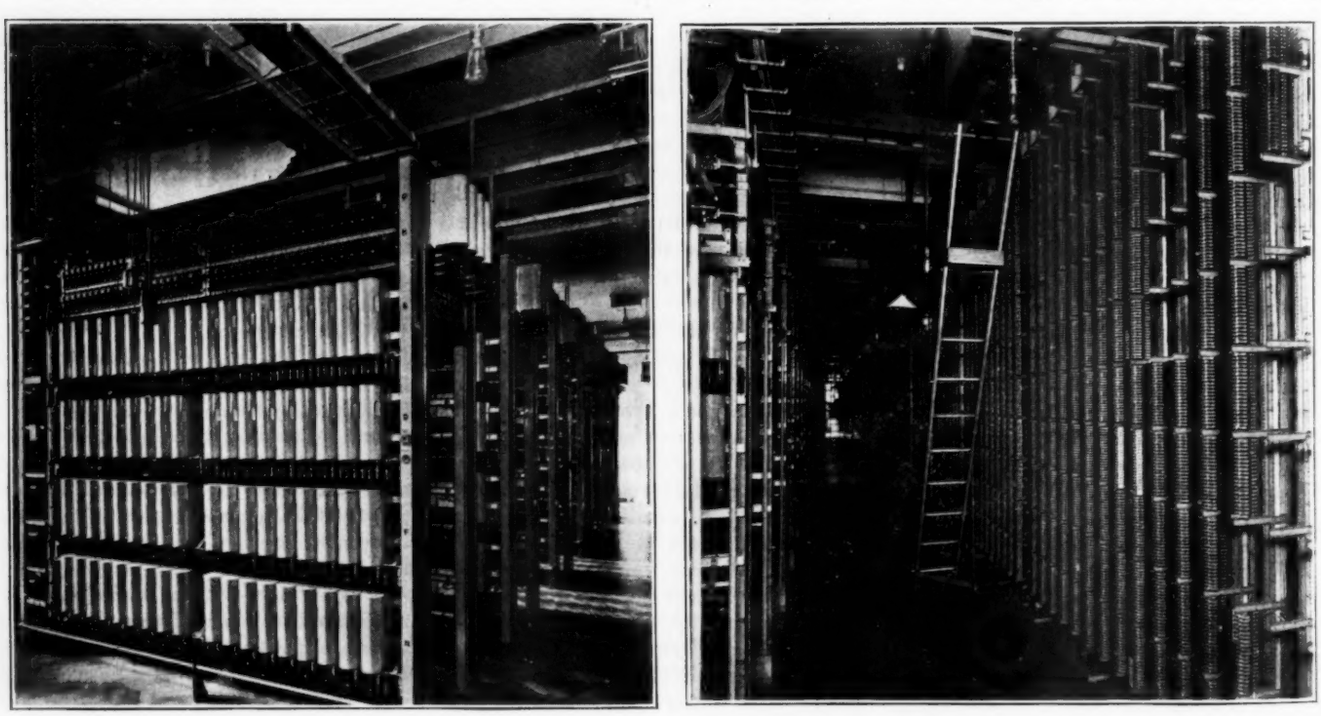
In the negative lead of each battery is inserted a 2,000-ampere circuit-breaker as a protective device. These breakers are fitted with an overload trip, rated at 100 per cent overload, to accommodate momentary peak loads. The power plant and switchboard are on the first floor and will ultimately supply the necessary charging and ringing currents for all three exchanges. Four charging machines have been installed initially—two per exchange.

These charging machines are of Crompton-Parkinson manufacture and of the auto-synchronous type, each having an auxiliary exciter mounted on the common bedplate.

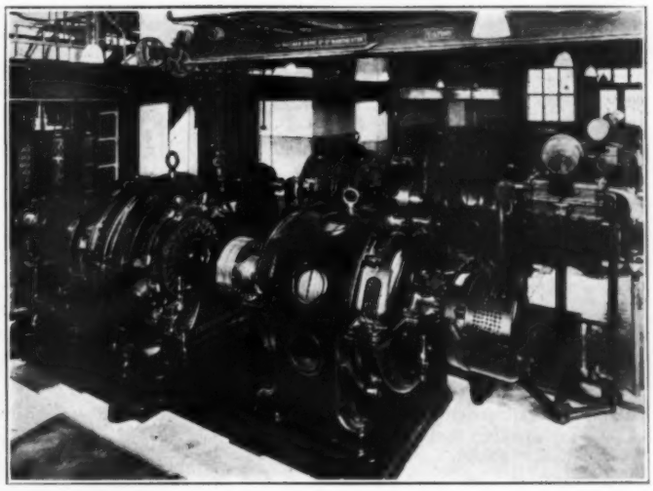
They are designed for operating on a 400-volt, 50-cycle, three-phase, A. C. supply, at unity power factor. The motor and exciter are of the protected type, and are direct coupled to an open type shunt-wound dynamo, developing 1,600 amperes at 57 volts, with a voltage regulation of from 50 to 68 volts.

The exciter field is controlled from a regulator mounted on the circuit breaker support. The dynamo voltage regulation is controlled from back-of-board regulators mounted on the power board. The motor control panels comprise two units for each set, one unit consisting of an oil-immersed, totally enclosed rotor starter; and the other a three-pole circuit breaker, totally enclosed, oil-immersed, with three overload and one no-volt trips.

Each charging machine will be used in



First Code Selector Boards in the National Exchange, London—Main Distributing Frame, Protector Side, in the Metropolitan Exchange, London. It Is 100 Feet Long and Extends Nearly the Full Length of the Building.



Battery Room, Metropolitan Exchange, London, With Two Main Batteries of 25 Cells Per Battery—Power Room With Charging Motor-Generators, Two Each for Metropolitan and National Exchanges.

series with its choke coil to float on the exchange discharge circuit during busy-hour periods, the design being such that no interference is caused with conversations in progress. Inter-switching facilities are provided which enable any machine to be associated with any battery for floating or charging.

The guaranteed efficiencies of all four machines are 82 per cent at full load and 78 per cent at half load.

The ringing machines—two per exchange—are by Haslam & Newton. One of each pair is driven from the 400-volt, three-phase, 50 cycle supply, while the other is wound for running from the exchange main battery at 50 volts. The output of each ringing machine is four amperes at 75 volts, single phase, 16⅔ cycles, at a speed of 1,000 r.p.m.

The power board for controlling the charging machines and batteries has an overall length of 22 ft. 6 ins., and is 7 ft. high. It comprises 13 bays of black-enamelled slate panels. Plug-bar switching is arranged for the control of the charging and floating circuits. The instruments, comprising one "charge" and one "discharge" ammeter, and one voltmeter, are of Edgewise pattern, and are mounted on swivel brackets on the top framework of the board. Two contact voltmeters are provided and are allocated, respectively, to the "high" and "low" voltage alarms.

Two choke coils, one for each exchange, serve for the floating condition of charging machine and main battery and are mounted on the floor at the rear of the power board.

The ringer control panels are located at the extreme left of the power board, the usual switching change-over facilities being provided for automatically cutting in the battery-driven machine in the event of failure of the main power supply.

The second, third, fourth and fifth floors are occupied by the Strowger automatic telephone exchange equipment for the Metropolitan and National exchanges, with reserve space for the Empire exchange equipment when installed.

Altogether there are 186 rotary line-switch units, 95 of which are allocated to Metropolitan, and 91 to National exchange. These are equipped with a total of 19,000 Strowger rotary line switches of the homing type, in which the wipers return to a "home" position following the completion of every call.

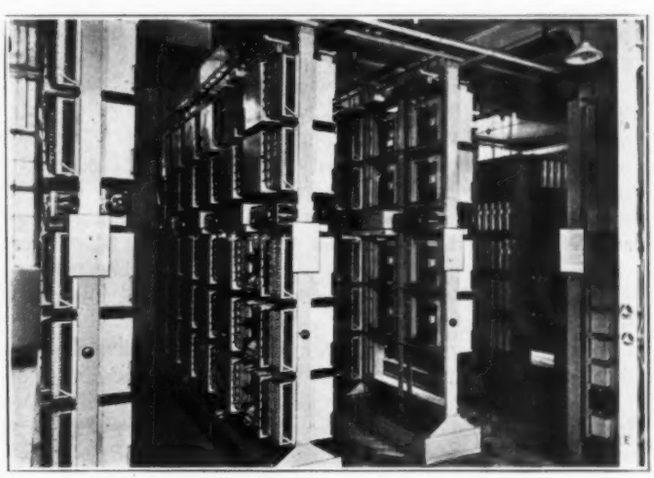
Like Holborn and Bishopsgate, the first two large automatic telephone exchanges to be installed in the Greater London area, these also are Strowger director exchanges in which calls are routed automatically to any part of the area before the wanted number is finally selected at the exchange on which the line terminates.

Metropolitan has 15 director racks, and National 16. Associated with these are 1416 "A" digit switch finders, 332 "A" digit switches, and 496 directors.

Eighty-eight trunk boards are necessary to accommodate the selectors for the two exchanges, a summary of which is as follows:

	Number	
Type of Selector	Metropolitan	National
First code	1277	1416
Second code	1257	1277
Third code	148	158
First numerical ..	1868	1903
Second numerical.	1606	1668
Third numerical..	55	180

In addition to these, Metropolitan exchange is at present equipped with 1,827 and National with 1,572 final selectors.



"B" Position Racks, National Exchange—Director Racks, Metropolitan Exchange; These Racks Are of New Design With Economies in Floor Space and Other Advantages.

When it is realized that the whole of this vast quantity of Strowger switches represents the modern equivalent of the crude model constructed from a collar box and a packet of pins by the original inventor, Almon B. Strowger over 40 years ago, the wonderful progress of the art of automatic telephony is fully appreciated.

In addition to the standard rotary line-switch units, trunk boards, and director racks, a quantity of miscellaneous equipment is also provided for the service of both exchanges some of the more important items being as under:

Type of Equipment	Number
C. C. I. repeater and coder rotary lineswitch racks	18
Cordless "B" position apparatus racks	52
Semi "B" sender racks	4
Coder boards	4
Miscellaneous repeater racks.....	2

Equipment associated with these racks includes 1,297 C. C. I. repeaters, 1,602 coder final rotary line switches, 112 coders, and 104 cordless "B" senders.

Progress in the development of Strowger automatic telephone exchange equipment proceeds apace, and a novel feature has been introduced into Metropolitan and National exchanges in the shape of single-sided racks for mounting certain items of the equipment.

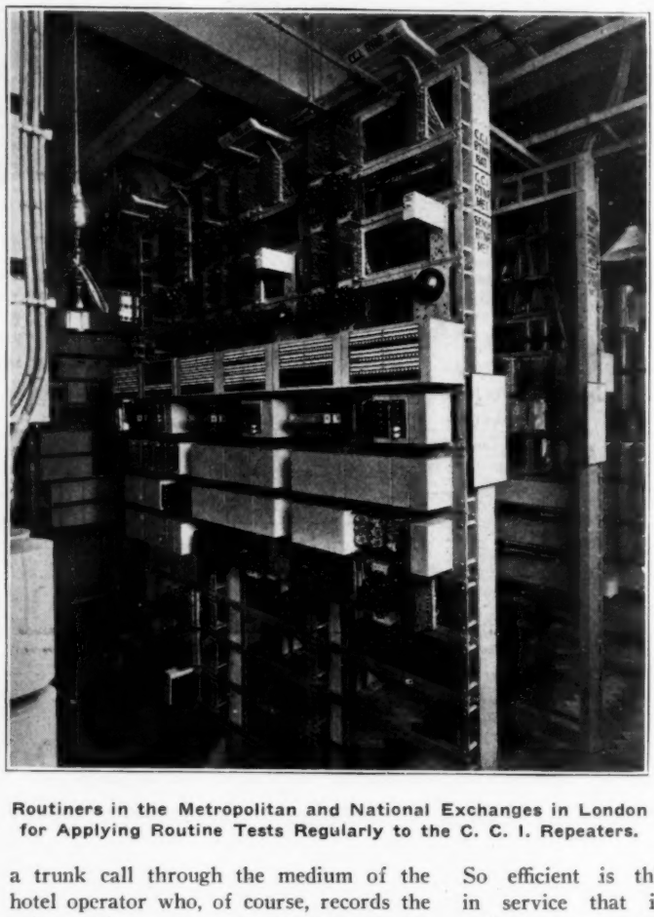
These racks can be erected much closer together than the ordinary line-switch units and trunk boards, thereby effecting material economies in floor space, making for more facile mounting and inspection of the equipment, and enabling the latter to be assembled, wired and mounted in convenient self-contained units. Furthermore, the new design affords greater mechanical protection to the wiring and cabling and eliminates the ill effects of accumulation of dust.

These racks were designed and manufactured by the contractors, Automatic Telephone Mfg. Co., Ltd., Strowger Works, Liverpool, and constitute a distinct advance on all previous methods of mounting and wiring Strowger automatic telephone exchange components.

In addition to performing the normal duties of routing a call and selecting the wanted number in the final exchange, the Strowger selectors carry out quite a number of special duties, with the same meticulous accuracy as the mere switching through of one automatic subscriber to another, without the intervention of an operator.

Thus, the trunk offering final selector will, in the event of a trunk call, single out the wanted number, whether engaged or free; and, if the former condition obtain, connect with the line and enable the trunk operator to challenge and offer the more urgent trunk call in the usual way. Again, what are known as "Barred trunks" are similarly taken care of by another type of Strowger selector. This is to meet the case of P. A. B. X. lines entering the exchange from, say, a hotel or other premises where access to trunks is necessarily differentiated as between management and guests.

Under this system a guest can dial locally from his room but can only originate a trunk call through the medium of the hotel operator who, of course, records the call for the purpose of collecting the fee from the guest.



Routiners in the Metropolitan and National Exchanges in London for Applying Routine Tests Regularly to the C. C. I. Repeaters.

Then there are the P. B. X. final selectors associated with P. B. X.s having a number of exchange lines but only one directory entry. All callers dial the one number, but the discriminating selector rapidly searches the entire available group and connects with the first disengaged junction located.

The main distribution frame for Metropolitan exchange on the second floor, to which are brought the lead-covered cables from the tunnel previously referred to, is 100 feet long. It comprises 177 verticals and extends nearly the full length of the building. Access is facilitated by four traveling ladders on either side.

The subscribers' meter racks, on the fourth floor are similarly equipped with traveling platforms to facilitate inspection and reading of the meters. In this connection it is worth recording that the change-over to Strowger automatic operation disposes once and for all of the vexed question of accurate call registration upon which the Post Office and its subscribers have in the past so frequently failed to agree.

A call put through by Strowger automatic telephone exchange equipment, on the other hand, cannot be metered until the called party responds by lifting his receiver, thereby maturing the call, registration being entirely automatic.

In the event of a "wrong number" being dialed and the distant subscriber replying, the call will, of course, be registered against the caller, a just tax on carelessness in manipulating what is, after all, an extremely simple and efficient device, the Strowger calling dial.

A regular feature of all large Strowger automatic telephone exchanges today is the routiner equipment which regularly and entirely automatically applies a drastic series of routine tests to each and every section of the equipment, thereby anticipating any abnormal condition and enabling it to be rectified before trouble actually occurs. So efficient is this routiner equipment in service that it is seldom a subscriber on an automatic exchange experiences trouble on his line, inasmuch as it has been detected and remedied before it had time to prejudicially affect the service.

Metropolitan and National exchanges are equipped with the following routiner racks for regularly applying routine tests to these associated items of exchange equipment: First code routiner, director routiner, coder routiner, C. C. I. repeater, routiner, sender routiner, "B" position routiner.

In addition to this automatic testing equipment which, when switched into circuit, proceeds to carry out its duties without human intervention, there is also provided the customary standard test desk equipment. In the case of Metropolitan and National exchanges, this comprises a 10-position desk, equipped with every facilityity for selecting any subscriber's line or junction circuit on the exchange and applying any necessary tests to determine its condition or locate faults if such exist.

On the sixth and uppermost floor of the new building are accommodated the 84 special "A" and 42 semi "B" key-sending

positions for dealing with auto-manual traffic and vice versa, during the transition period, which is calculated to occupy from 15 to 20 years.

The system in vogue at Metropolitan and National exchanges is precisely the same as at other Strowger automatic exchanges in the Greater London telephone area. Subscribers dial seven successive digits, the first three of which represent the initial three letters of the name of the wanted exchange—CEN for Central—while the remaining four, known as the numerical digits, represent the number of the wanted subscriber whose line terminates on that exchange. The impulses set up dialing the first three letters operate the director and are duly converted into the code representative of the exchange selected. Meanwhile the numerical impulses are stored, and, as soon as the routing process is complete, pass out over the extended circuit to complete their function of selecting the required subscriber in the usual way.

The whole of the Strowger automatic telephone exchange equipment for Metropolitan and National exchanges has been manufactured and installed to the order of the British Post Office by Automatic Telephone Mfg. Co., Ltd., Strowger Works, Liverpool, which was also the contractor for Holborn, Bishopsgate, Mechanical Tandem, and Monument automatic exchanges, already completed and in service, together with the coder call indicator equipment at some 80 manual exchanges for auto-manual intercommunication.

The British Post Office is to be congratulated upon the very material progress it is making in the conversion of the London area to automatic operation, and especially upon the successful completion of the present large combination exchange at Wood street, which constitutes a record capacity in a single building.

Maintenance of Assignment Records

Question of How to Reduce Assignment Errors to a Minimum of Interest to All Plant Departments—Cable Charts and Preassignment Records Must Be Accurate and Complete—Plan of Reducing Errors Followed by Bell Company

By A. V. Bowers,
Southwestern Bell Telephone Co., San Antonio, Texas.

Of particular interest to all plant departments is the subject of assignment errors. These errors will slip in whenever service orders are pre-assigned and, unless something is done to prevent it, may grow to an embarrassing magnitude. Therefore, we are bound to face the question of how to reduce to a minimum these errors, so inevitable to come.

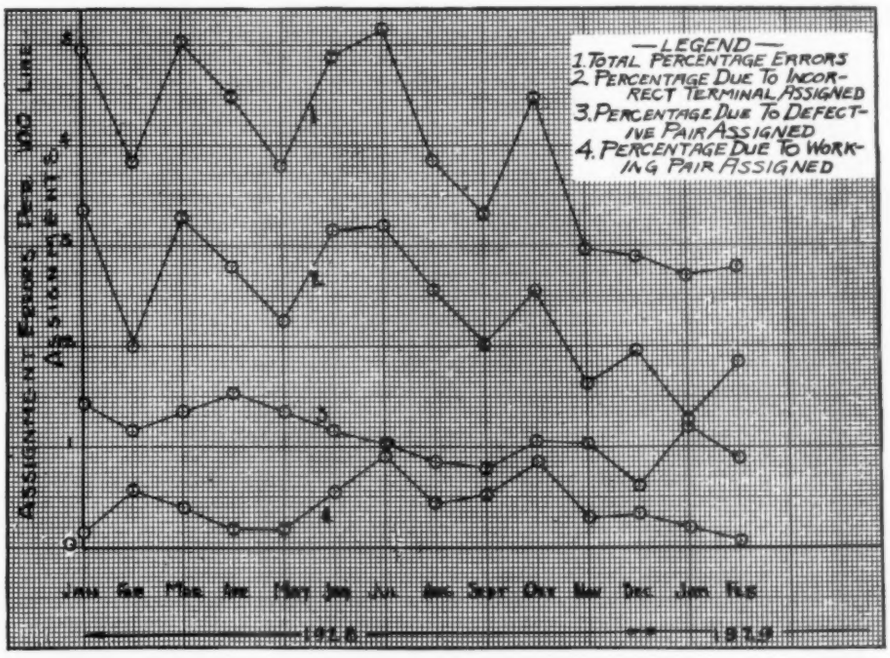
There are obviously two records that must be accurate and complete before a small percentage of errors is at all possible. The cable charts or records and the preassignment records must reflect in a thorough and complete manner the existing plant conditions.

They must be changed and expanded daily to comply with changes and extensions in the outside plant. The daily maintenance of these records is in the hands of the assignment clerks—but no matter how careful and accurate they are, errors will creep in.

We, of the San Antonio district, have found it necessary, to obtain a low percentage of errors, to make regular, systematic, and thorough checks of all preassignment and cable records. No unique system of deduction was applied to our problem—it was merely a common-sense proposition.

When we discovered from the assignment report—which is a record of changes in line assignments on service orders kept by the assignment clerk—that the bulk of errors was due to incomplete or incorrect cable records, we naturally decided that the way to reduce the number of these errors was to check our records with the existing plant conditions for the purpose of making corrections where needed.

The graphs in Fig. 1 indicate clearly how the assignment report points to faulty cable charts. By checking these charts we were attacking the largest source of error and were certain to reap the greatest benefits if we could reduce this source. Accordingly we began a systematic check of all the cable terminating on the main distribution frames—the check being made against the cable charts and against the line cards kept by the maintenance department.


—LEGEND—
1. TOTAL PERCENTAGE ERRORS
2. PERCENTAGE DUE TO INCORRECT TERMINAL ASSIGNED
3. PERCENTAGE DUE TO DEFECTIVE PAIR ASSIGNED
4. PERCENTAGE DUE TO WORKING PAIR ASSIGNED
ASSIGNMENT ERRORS PER 100 LINES
JAN. FEB. MAR. APR. MAY JUN. JUL. AUG. SEPT. OCT. NOV. DEC. JAN. FEB.
1928
1929

Curves Showing Cable Assignment Error Variation in San Antonio, Texas. Note Decrease in Total Percentage of Errors.

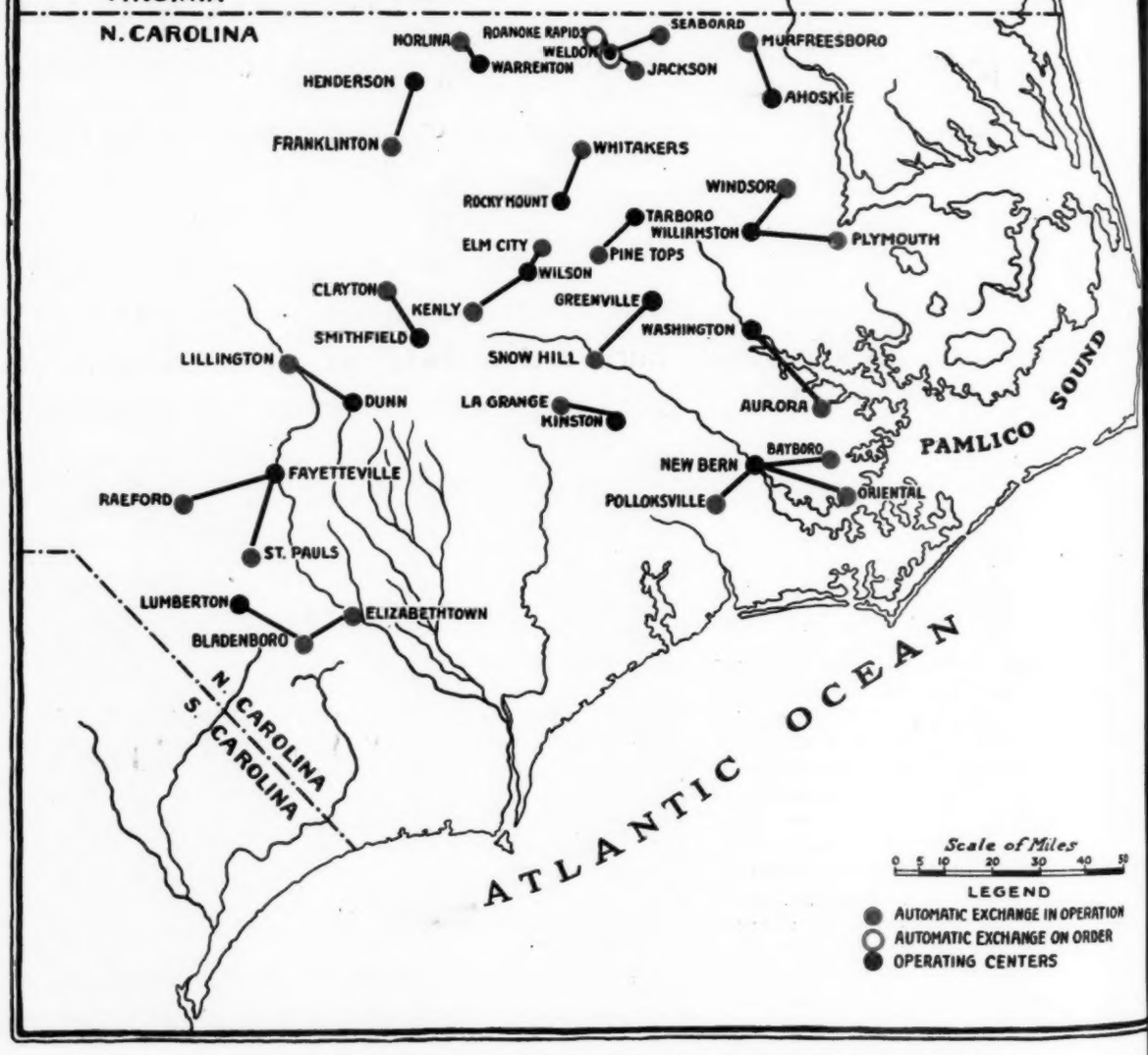
The first part was an inside check made from the main frames to the switchboards. In this check a man examined each and every cable pair terminating on the frames—going in on the working ones with a test set and determining what was there, if there was a missing or wrong number plate, a special circuit not marked a dead jumper, or a loose connection.

Whenever a discrepancy between the records and the actual conditions was found, it was traced out and the records changed to agree with them. A copy of the discrepancies furnished the wire chief supervisor was the means for the removal of such irregularities as dead jumpers, missing number plates, loose connections, and special circuits not marked.

Several hundred errors were found and corrected in this first lap of our "house-

(*Please turn to page 32.*)

This Company Has 24 Strowge



Eastern Half of North Carolina, Showing Automatic Exchanges of Carolina Telephone and Telegraph Company (in Red)

One or more trunks connect each unattended automatic exchange to the nearest "operating center," where toll, information and special services are handled by the regular operating force. Supervisory signals are also extended to these points, so as to insure continuously satisfactory functioning of the equipment.

STROWG

DIAL S

When writing to Automatic Electric Inc., please mention TELEPHONY

tomatic Dial Exchanges In peration—With More On Order

SEVERAL years ago the Carolina Telephone and Telegraph Company converted six of its small exchanges to Strowger Automatic Dial operation, to work on an unattended basis. So successful were these exchanges from every viewpoint, that eight more were converted to this method of operation. Since that time, Strowger Automatic Dial Systems have been steadily added to the Company's network, until today there are 24 in service, with two more on order.

When a progressive operating organization such as the Carolina Telephone and Telegraph Company continues a program of conversion to Strowger Automatic Dial operation on such an extensive scale, after years of experience with this equipment in its own exchanges, only one conclusion can be drawn. That is, that Strowger operation is economical operation. Besides putting such exchanges on a paying basis, it also brings the finest possible service to the citizens of these small communities.

Automatic Electric Inc.

Manufacturers of

STROWGER AUTOMATIC DIAL TELEPHONE AND SIGNALING SYSTEMS

Factory and General Offices: 1033 West Van Buren Street, Chicago, U. S. A.

Sales and Service Offices in All Principal Cities

EXPORT DISTRIBUTORS

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For Canada . Independent Sales and Engineering Co., Ltd., Vancouver
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ASSOCIATED COMPANIES

American Electric Company, Inc. . . . . Chicago
International Automatic Telephone Co., Ltd., London
Automatic Telephone Manufacturing Co., Ltd., Liverpool
The New Antwerp Telephone & Electrical Works, Antwerp

TOMATIC
STEMS

When writing to Automatic Electric Inc., please mention TELEPHONY

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cleaning"—and though it may seem like a very tedious and long job, the results are most pleasing, as shown by the graphs in Fig. 1. The four curves shown were drawn from the assignment report of errors made on service orders and indicate clearly how the percentage has decreased with the checking. This cable check began in the latter part of October, 1928, and its effects are to be noted on the curve sheet throughout the next four months. The two other cable checks, just now begun, are sure to further reduce the percentage of errors. The second check is essentially in two parts.

First, a check from each underground terminal—similar to the one on the main frames wherein a man goes in on each pair with a test set and verifies the number working there by means of the cable chart record of that terminal. He also verifies the address and count of the terminal—removing dead jumpers in F. X. boxes and making corrections so that the outside plant conditions are exactly represented on the cable charts.

Second, a check of the vacant cable pairs, made from a position on the test board and consisting of tests for shorts, crosses and grounds on the cable pairs not being used. In this test a talking circuit is established from a man at the test board to an assistant on the main frame. The latter applies the testing "sticks" successively to the cable pairs as requested by the tester, who uses the cable chart as his guide, marking directly on the record the faults found. The value of this check is obvious and when complete will materially lower curve No. 3 of Fig. 1.

The third and last of the series of cable checks will be made from each aerial cable terminal and is identical to the check of the underground terminals, so will not again be explained.

The other principal factor in keeping a low percentage of errors is the maintaining of the pre-assignment file. As the routine requires, the information for changes and extensions of the file is furnished the assignment office by the engineers on the prints of the work as it is authorized. However, we have found it expedient to make a check of the work as soon as it is completed for the purpose of bringing the file entirely up to date.

As soon as any work order, job order, or estimate is completed, the assignment clerk takes his print of the work, goes out and determines just which houses will work from each terminal. These terminal limits are marked directly on the work print and later transferred to old or new cards in the file as required.

The maintenance of the file after it has been in use is augmented by the use of a large map of the city for the purpose of giving a picture of the districts wherein assignment errors have been made. An installer, on finding that a street address will naturally work from a terminal other than the one assigned, calls the assignment office to get his new assignment and informs the clerk of the error made.

These errors are posted daily to the large map by means of colored pins—a green pin at the terminal where an error was made on a new installation order, and a blue pin where an error was made on a field reconnect order—and give a graphic indication of the plats of territory needing a terminal check. Those areas with the largest number of pins are checked first, the checker drawing to a large scale a map of this area, showing the terminal locations and going to the ground and indicating which addresses work from each terminal.

New cards are made from this or the old ones changed when discrepancies are found. The scattered areas where errors have been made are checked when the grouped plats have been disposed of. Areas checked are outlined in colored pencil and cleared of pins so that additional checks may be made if other assignment errors occur in that area.

This, in a brief way, is the manner in which we are reducing our assignment errors. Every office will have its own problems to face, for assignment practices vary and no set rule to follow can be laid down. The idea of using the graphs from the assignment report to indicate just where the trouble lies, of dispatching one man, or a man and a helper, to do the entire job so that the checking will be centralized, and of using a large city map and colored pins to indicate where the pre-assignment file is weakest, forms the basis of this paper.

The value of complete and correct pre-assignment file and cable charts is almost inestimable, and the saving in time for making assignments, the reduction of overhead installation time, and the reduction to a minimum assignment errors—all point to a regular, systematic and thorough checking scheme as the only method of obtaining and keeping them.

District Meeting of New York Association at Malone.

The annual district meeting of the Upstate Telephone Association of New York at Malone took place on September 14.

An address of welcome to the 152 persons present was delivered by J. G. Ihmsen, president of the association. The meeting was then turned over to B. H. Brooks, vice-president and general manager of the Northern New York Telephone Corp., who acted in the capacity of chairman of the meeting.

The morning session was a joint meeting of all persons in attendance, and papers were presented on various subjects. L. C. Desso, general auditor of the Northern New York company, spoke on "Why All These Records?" and pointed out the joint responsibility of the accounting department and the people of the departments in the field. Particular emphasis was placed on the obligation of proper accountability to the company's stockholders.

The second paper was presented by M. G. Larkin, commercial engineer of the Northern New York company from Plattsburgh, who spoke on "Rural Map Records," explaining why and how these important records are maintained. A detailed record is kept at all times of all the pole lines and location of all telephone subscribers in the rural sections served by the Northern New York company.

F. B. Kessler of Plattsburgh then delivered an instructive treatise on "Multi-Switch Traffic."

The fourth and last paper given at the morning session was by R. H. Godson, district manager of the Northern New York company at Saranac Lake on the subject, "How Other Departments Assist in Collections." This was one of the most interesting and instructive talks of the morning.

At noon the Northern New York Telephone Corp. acted as host to the entire assembly at a delicious dinner served by the steward of the Elks Club.

The afternoon session was divided in two separate groups, the operators conducting a traffic conference at the Flanagan Hotel under the able chairmanship of Miss M. P. Croake, traffic supervisor of the Northern New York company at Plattsburgh.

At this meeting the following papers were presented: "The Importance of Technique in Operating," by Mrs. Pernice of Norwood, "Responsibility of the Tributary Chief Operator," by Miss Carey of Keene, and new traffic instructions were discussed at length. Remarks were also heard from H. W. Covey, district traffic superintendent of the New York Telephone Co. at Utica, R. A. Johnson, traffic superintendent, of Utica, and F. W. Tesnow, division toll traffic supervisor at Syracuse.

While the traffic conference was in session, the men and women of the plant department held a plant conference at the Elks Club.

There was much active participation in the discussion by representatives of the connecting companies as well as by various officials of the Northern New York Telephone Corp.

The Upstate association has held a number of district meetings during the past few months. The meeting in the Northern New York district is so largely attended that a special program is prepared while at the other meetings there are no fixed speeches.

At those other district meetings open discussions upon subjects brought up by those attending are favored and develop greater interest than prepared programs.

The Financial Side of Companies

Miscellaneous Items of Interest Regarding Financial Matters of Telephone Companies—New Securities Issued During Past Month—Figures From Annual Reports of Companies—Some Financing and Expansion Plans for 1929

A. T. & T. Co. and Illinois Bell July Earnings Show Increase.

The report of the American Telephone & Telegraph Co. to the Interstate Commerce Commission shows substantially increased gross and operating incomes for July and the first seven months of this year. The Illinois Bell Telephone Co. reported like results. Earnings of these companies follow:

AMERICAN TELEPHONE & TELEGRAPH CO.

	1929.	1928.
July gross	$ 9,040,650	$ 7,949,241
Net operating revenue	3,408,943	3,205,320
Net operating income	2,878,183	2,695,067
Seven months' gross	63,736,651	56,444,777
Net operating revenue	28,097,959	26,270,215
Operating income	23,192,712	21,619,837

ILLINOIS BELL TELPHONE CO.

	1929.	1928.
July gross	$ 7,459,463	$ 6,483,136
Operating income	1,114,850	906,838
Seven months' gross	52,287,508	46,053,368
Operating income.	10,482,605	8,593,850

Gold Bonds of Jamestown Company, N. Y., Placed on Sale.

The Jamestown Telephone Corp., Jamestown, N. Y., recently announced for sale its first mortgage 5 per cent gold bonds to the amount of $1,200,000, dated June 1, 1929, and due June 1, 1954.

The Jamestown company was incorporated under the laws of New York state in 1918, being a consolidation of the local and Bell interests in that vicinity. It has since that time successfully operated telephone properties serving without competition the city of Jamestown and 27 towns in the southern part of Chautauqua and Cattaraugus counties, with a total population estimated in excess of 75,000. The system operates six exchanges with over 10,600 stations in service. The total value of the property of the Jamestown company, as determined by engineers and auditors of the New York Public Service Commission, is $2,429,932.

Gross revenues of the company for 1928 were $500,994; net earnings before depreciation, $174,978; depreciation, $67,596 and net earnings after depreciation, $107,382.

The proceeds of the sale of these first mortgage bonds will be used to redeem and pay all of the outstanding issue of bonds and notes in the amount of $394,000; to erect a central office building at Jamestown; to replace the present manual switchboards with the most modern type automatic equipment and to reimburse the treasury for past construction.

The issue is marketed by the Peoples Savings & Trust Co. of Pittsburgh; First National Bank of Sharon, Pa.; First National Bank of Pittsburgh; Chas. Messemkoph & Co., of Erie, Pa., and R. F. DeVoe, New York City.

June Earnings of Class A Companies Show Increases.

Compilations from reports of revenues and expenses of 99 telephone companies, as made to the Interstate Commerce Commission for the month of June, 1929, show gross operating revenues of $93,890,102, as compared with $86,840,263 for the corresponding month of 1928, showing an increase of 8.1 per cent. The operating income for the same months was $22,081,563 and $21,606,022, an increase of 2.2 per cent.

Operating revenues for the six months ended with June, 1929, were $560,894,598, as compared with $509,642,182 for 1928, showing an increase of 10.1 per cent for this year. Operating expenses for the same period were $374,676,851 and $334,497,342, respectively, an increase of 12 per cent for 1929. The operating income amounted to $137,642,982 for this year's six months' period, an increase of 7 per cent over 1928, when it was $128,645,121.

The companies, which include only those having annual operating revenues in excess

(*Please turn to page* 36.)

Items.	Month of June				Six months ended with June			
	1929.	1928.	Increase or decrease (*). Amount.	Ratio, Pct.	1929.	1928.	Increase or decrease (*). Amount.	Ratio, Pct.
Number of company stations in service at end of month	16,332,476	15,412,871	919,605	6.0	.....	.....	.....	....
Revenues:								
Subscribers' station revenues	$56,365,372	$52,883,647	$3,481,725	6.6	$338,362,755	$314,982,767	$23,379,988	7.4
Public pay station revenues	3,846,136	3,792,653	53,483	1.4	23,451,186	22,159,557	1,291,629	5.8
Miscellaneous exchange service revenues	800,593	685,390	115,203	16.8	4,626,269	3,993,062	633,207	15.9
Message tolls	26,848,442	24,340,072	2,508,370	10.3	159,150,976	138,794,104	20,356,872	14.7
Miscellaneous toll line revenues	3,552,900	3,018,876	534,024	17.7	20,780,421	17,256,421	3,524,000	20.4
Sundry miscellaneous revenues	2,440,525	2,068,060	372,465	18.0	14,308,498	12,202,365	2,106,233	17.3
Licensee revenue—Cr.	1,230,956	1,482,508	*251,552	*17.0	7,235,256	8,714,925	*1,479,669	*17.0
Licensee revenue—Dr.	1,194,822	1,430,943	*236,121	*16.5	7,020,763	8,460,919	*1,440,156	*17.1
Telephone operating revenues	$93,890,102	$86,840,263	$7,049,839	8.1	$560,894,598	$509,642,182	$51,252,416	10.1
Expenses:								
Depreciation of plant and equipment	$14,406,570	$13,447,343	$ 959,227	7.1	$ 85,002,782	$ 79,236,524	$ 5,766,258	7.3
All other maintenance	15,629,716	13,500,758	2,128,958	15.8	91,281,123	76,345,401	14,935,722	19.6
Traffic expenses	19,788,700	18,549,536	1,239,164	6.7	115,869,835	108,344,752	7,525,083	6.9
Commercial expenses	8,770,557	7,627,379	1,143,178	15.0	52,132,020	44,795,440	7,336,580	16.4
General and miscellaneous expenses	5,299,012	4,611,691	687,321	14.9	30,391,091	25,775,225	4,615,866	17.9
Telephone operating expenses	$63,894,555	$57,736,707	$6,157,848	10.7	$374,676,851	$334,497,342	$40,179,509	12.0
Net telephone operating revenues	$29,995,547	$29,103,556	$ 891,991	3.1	$186,217,747	$175,144,840	$11,072,907	6.3
Other operating revenues	*$ 5,316	$ 6,089	*$ 11,405	....	$ 20,667	$ 40,803	*$ 20,136	....
Other operating expenses	6,726	11,842	*5,116	....	41,712	66,881	*25,169	....
Uncollectible operating revenues	576,219	513,686	62,533	12.2	3,511,472	3,244,608	266,866	8.2
Operating income before deducting taxes	$29,407,286	$28,584,117	$ 823,169	2.9	$182,685,230	$171,874,156	$10,811,074	6.3
Taxes assignable to operations	7,325,723	6,978,095	347,628	5.0	45,060,248	43,229,035	1,831,213	4.2
Operating income	$22,081,563	$21,606,022	$ 475,541	2.2	$137,624,982	$128,645,121	$ 8,979,861	7.0
Ratio of expenses to revenues, per cent	68.05	66.49	1.56	....	66.80	65.63	1.17	....

Summary of Monthly Reports of Class A Companies for June, Compiled by Interstate Commerce Commission.

"P & H Process" Western Red Cedar Poles in lines of Tri State Telephone & Telegraph Co., St. Paul, Minn.

What is the Life of a "P&H Process" Pole?

FREQUENT inspections of "P & H Process" Poles set in lines located in different sections of the country, plus data given us by other users, discloses no evidence of decay and a sufficient amount of free oil throughout the groundline area of the poles to assure a protection of over 30 years in addition to its untreated natural life of 13½ years (as given in Report of Committee on Preservation Treatment of Poles and Cross Arms-Proceedings of N. E. L. A.)

Thirty-five to forty years is, therefore, a conservative estimate for the life of a "P & H PROCESS" Pole. This long life is made possible by a thorough understanding of the principles of wood preservation, the ability to correctly apply these principles and a predetermined standard for everything done in the manufacture and Butt-Treating of "P&H Process" Cedar Poles.

All Cedar Pole requirements . . . Northern White Cedar or Western Red Cedar.

"Still in the Lead"

PAGE AND HILL CO.

MINNEAPOLIS, MINN.

New York, N. Y., 50 Church St.
Chicago, Ill., 19 So. La Salle St.
Boston, Mass., 733 Public Service Bldg.
Kansas City, Mo., 517 Pioneer Trust Bldg.
Dayton, Ohio, 854 Reibold Bldg.
Omaha, Neb., 711 Electric Bldg.

(*Continued from page* 33.)

of $250,000, had 16,332,476 company stations in service at the end of June, 1929, an increase of 6 per cent over 1928, when there were 15,412,871.

Manitoba Government Telephones' Surplus for Seven Months.

The Manitoba Government Telephones, Winnipeg, Can., show a surplus of $154,104 for the seven months ending June 30, 1929. The total revenue amounted to $2,224,760 and expenses totaled $1,479,940, with net telephone earnings of $744,820. The condensed earnings report for the seven-month period ending June 30 follows:

Revenue:	
Exchange revenue	$1,792,324.14
Toll revenue	411,878.73
Sundry net earnings	20,557.54
Total revenue	$2,224,760.41
Expenses:	
Operation	$ 546,191.78
Current maintenance	475,128.75
Plant replacement	457,550.00
Taxes	1,069.99
Total expenses	$1,479,940.52
Net telephone earnings	$ 744,819.89
Deduct:	
Interest charges	$ 548,715.56
Amortization intangible capital	42,000.00
	590,715.56
Surplus	$ 154,104.33

The system is now operating over 50,000 telephones. In the seven-month period reported there was a gain of 1,222 telephones in the city of Winnipeg, 255 local telephones in the province and a decrease of 184 rural telephones in the province.

Northwestern Bell Operations Reflect Good Conditions.

The improved conditions in the Middle West are accurately reflected in the report of the Northwestern Bell Telephone Co., which operates in the five states of Nebraska, Iowa, Minnesota and the Dakotas, filed with the Nebraska commission, covering the period of the first seven months of the year. Exchange revenues increased $614,382 and toll revenues $646,000 over the same period last year. The company earned net 11.31 per cent on its common stock, after payment of preferred stock dividends, a new high mark, and earned 7.44 per cent on the average plant in service.

Exchange revenues were $12,851,407, toll revenues $5,898,561 and miscellaneous $579,447, a total of $19,329,415 and an increase in revenues of $1,308,258. Operating expenses were $7,293,314, an increase of $430,795; maintenance, $3,249,079, an increase of $320,655; depreciation, $2,855,468, an increase of $79,624; and taxes, $460,919, a decrease of $8,077.

Total expenses were $14,858,781; net earnings, $4,470,635; net profits, $4,469,369. Of this sum $3,215,000 were paid out in dividends, leaving $1,254,234 to be passed to surplus, an increase for the period of $283,798. The company has a little over nine millions of 6.5 per cent preferred stock and 65 millions of 8 per cent common outstanding.

Total assets of the company are $117,768,000, of which $112,222,000 are invested in plant. It has payables of $8,500,000, a depreciation reserve of $27,895,000 and a surplus of $7,701,000.

Net telephone earnings to plant in service were 7.44 per cent and net profits to common stock, after payment of preferred stock dividends, 11.31 per cent. The telephone revenue to average plant in service was 31.51 per cent; operating expenses to telephone revenue, 37.73; telephone expenses to telephone revenue, 76.87 per cent; maintenance, 5.41 per cent; depreciation, 4.72 per cent.

The number of stations operated by the company is now 635,941, an increase since the first of the year of 31,386; connecting stations, 913,386; decrease, 29,697, and a total stations of 1,549,833.

Western Utilities Corp.'s Earnings Gain 20 Per Cent.

The Western Utilities Corp., San Francisco, Calif., reports net earnings available for interest, etc., for the 12 months ended June 30, 1929, at $413,420. Interest charges on the company's outstanding funded debt are $120,450. These earnings show approximately a 20 per cent increase over a similar period of 1928.

The company through its subsidiaries furnishes telephone and water service to 23 cities in Southern California.

The Western Utilities Corp. is controlled through ownership of its entire capital stock by Western Continental Utilities, Inc.

Standard Public Service Co. Shows Good Second Quarter Gain.

The gross income of the Standard Public Service Co., of Columbus, Ohio, not including Ashland Home Telephone Co., Ashland, Ky., for the second quarter of 1929 is reported as $459,275, compared with $446,369 for the same quarter of 1928.

Net operating income amounted to $197,304, against $181,466 reported for the same period last year.

Mutual, of Erie, Pa., Shows Continued Progress and Results.

The annual report of General Manager H. M. Engh of the Mutual Telephone Co., Erie, Pa., for the year ending June 30, 1929, states that it was another successful year for the company, through increased volume of business, better service to the subscribers, more economical operation of plant, and increased net profits.

"During the past fiscal year," says Mr. Engh, "we have increased our subscriber stations by 1,392 telephones. The greater portion of this increase was made during the past six months, in which time 1,147 telephones were added to the system.

"You will recall my mentioning at last year's meeting that we had passed the 25,000 mark for the first time in the history of the company, and I am pleased to state this year that the total subscriber stations now number 26,652, having passed the 26,000 mark in March of this year.

A large part of this station gain was due to an employes' subscriber drive, which was held during the first two weeks in February, during which time the employes secured 244 new subscribers and 284 added facilities, such as extension or monophones.

Owing to extensive rehabilitation of plant last year and our program of reconstruction this year, there has been a marked reduction in the number of complaints from our subscribers. In last year's report I mentioned that we had reduced complaints averaging over 500 per month per 1,000 subscribers in 1926 to less than 275 per month per 1,000 subscribers in 1928. This has been further reduced during the past year until now we are averaging only 102 cases of trouble per 1,000 subscribers.

Our plant and engineering departments are constantly studying the cases of complaint from various districts and are rebuilding our outside plant to eliminate causes of trouble and thus improve the service to our subscribers. During the past year we rebuilt our aerial plant, which necessitated an expenditure of approximately $150,000. At the present time work under construction includes improvements to property of approximately $100,000.

Our traffic department has improved long distance service considerably. This has been reflected materially in our toll revenues, for during the past year they have increased $11,000. To accomplish this improvement in toll service, our toll lines to all exchanges have been reconstructed so that today our subscribers are receiving equally as good toll transmission service over Mutual lines as over Bell long distance.

At present your company is making a commercial survey of the entire city to determine the future needs and requirements of the Erie exchange area for telephone service. This survey will assist the company in the consolidation of the old Bell and Mutual plants and will safeguard and protect the company's future expenditures for plant and equipment.

The actual research work connected with this survey necessitated a canvass of a great many residences and business houses within the Erie exchange area. When completed, it will reveal the expected development of the city as to total population, distribution of this population

and its characteristics, which, in turn, will enable the company to determine the amounts and types of telephone service which will be required in the next 5, 10, 15 and 20 years.

The survey will also be used by our engineering department in making its fundamental plan layout for outside plant construction, for it will reveal to them the number of possible subscribers in every district of the city, thus having a direct bearing upon the size and capacity of cables which will be required in the next 5 to 20 years.

On February 1 of this year our plant construction forces completed the installation of automatic pre-pay pay stations throughout the city of Erie. Our pay stations are now the same as those used in the larger cities throughout the country, and the collection of the money deposited in the pay station is insured. Our pay station revenues have increased over 20 per cent, due to the installation of the pre-pay automatic pay stations.

Our budget program for this year provides for gross additions to property accounts in the amount of $548,000. At the present time approximately 50 per cent of this program has been completed by our plant and engineering departments. Our budget estimated a growth in subscriber stations for the year of approximately 5 per cent, which has very nearly been attained in the first six months this year. This increase in subscriber stations has resulted in approximately $60,000 additional revenue over and above the same period last year.

The net result of the first six months' business for 1929 shows an increase of approximately $39,000 in net revenue over and above the same period last year.

Owing to the increase in business, our plant, maintenance and garage quarters have become very much overcrowded in this building. To meet the overcrowded condition in our main exchange building, and owing to the necessity of a yard for pole storage, the company purchased during the early part of this year a pole lot, on which we expect to construct a warehouse building which will house the construction and maintenance forces. When completed, the new warehouse will relieve the overcrowded condition in this building and will permit further expansion in the switch room, which is now needed for future growth of our switchboard.

In closing, I wish to say that your company is making consistent progress and improvement in all its operations. The success of the company, in my opinion, is not the result of the effort of one, or two, or even six or eight executives, but of the entire force of employes, who are working earnestly and faithfully in the interests of your company."

Revenues:	1929	1928	Increase *Decrease
Exchange revenues	$1,017,971.58	$ 972,599.94	$ 45,371.64
Toll revenue	106,254.52	94,280.27	11,974.25
Miscellaneous operating revenue	45,549.73	39,441.51	6,108.22
Total telephone revenues	$1,169,775.83	$1,106,321.72	$ 63,454.11
Expenses:			
Maintenance expense	200,408.82	218,204.11	*17,795.29
Depreciation	239,397.68	241,931.37	* 2,533.69
Traffic, commercial and general expense	281,387.68	246,048.07	35,339.61
Taxes	81,960.98	70,768.72	11,192.26
Total telephone expense	$ 803,155.16	$ 776,952.27	$ 26,202.89
Net telephone earnings	366,620.67	329,369.45	37,251.22
Sundry net earnings	5,450.69	3,754.03	1,696.66
Total net earnings	$ 372,071.36	$ 333,123.48	$ 38,947.88
Deduct interest	84,167.10	84,466.92	* 299.82
Balance net profits	$ 287,904.26	$ 248,656.56	$ 39,247.70
Dividends	119,934.75	119,862.00	72.75
Available for surplus	$ 167,969.51	$ 128,794.56	$ 39,174.95

Comparative Income Statement of the Mutual Telephone Co., Erie, Pa., for the Fiscal Years Ending June 30, 1928 and 1929.

At the annual meeting of the company's stockholders on July 20, the following were elected as directors for the forthcoming year: A. A. Culbertson, J. C. Spencer, A. W. Hayes, Charles H. English, John Z. Miller, J. M. Mangenau and E. S. Roach.

The stockholders also approved the increase of the capital stock from $2,000,000 to $5,000,000 and the proposal to acquire the properties of the Harborcreek Telephone Co.

At a meeting of the board of directors held July 31, the following officers were elected: A. A. Culbertson, president; J. C. Spencer, vice-president; A. W. Hayes, secretary and treasurer; H. M. Engh, general manager and assistant secretary; and C. C. Hobbs, assistant treasurer.

The comparative income statement for the fiscal years June 30, 1928 and 1929, is given in the accompanying table, and the balance sheet as of June 30, 1929, follows:

Assets:	
Intangible capital	$ 406,063.00
Physical property	5,284,146.23
Investments	14,950.00
Materials and supplies	111,196.32
Cash in banks and on hand.	187,673.35
Bond interest deposit	21,416.67
Receivables, etc	189,303.59
Total assets	$6,214,749.16
Liabilities:	
Bonds	$1,690,000.00
Capital stock	1,999,050.00
Accounts payable	103,844.71
Accrued liabilities not due	110,284.59
Reserve for accrued depreciation	1,063,212.67
Surplus	1,248,357.19
Total liabilities	$6,214,749.16

Associated T. & T. Co. Announces Issue of Class A Stock.

Fifty thousand shares of Associated Telephone & Telegraph Co. class A stock were recently placed on the market. This stock is listed upon the Chicago Stock Exchange and was initially offered at $60 per share flat. Telephone Bond & Share Co. and Dawes & Co., Inc., are marketing the issue.

The gross earnings of the Associated T. & T. Co. and subsidiaries for the year ended December 31, 1928, were $10,701,622.52; net earnings before depreciation were $4,701,738.76.

Consolidated net earnings available for dividends on the class A stock for the year ending December 31, 1928, after allowances for depreciation and taxes including federal income taxes, were $443,649.13 or more than $10 a share upon 42,084 shares of class A stock (as now constituted) outstanding during the year.

The management states that net earnings of two subsidiary companies for the first six months of 1929 are over $500,000 in excess of net earnings of such companies for the same period of 1928.

Issue of Middle Western Telephone Co. Class A Stock.

The Middle Western Telephone Co., Chicago, recently placed on the market 50,000 shares of its class A common stock. Emery, Peck & Rockwood Co. and Kent, Grace & Co. are marketing the issue, which was priced at $27.50. It is listed on the Chicago stock exchange.

The Middle Western company will control operating telephone systems in Wisconsin, Illinois and Ohio, which serve without competition a population in excess of 340,000. In Wisconsin, a subsidiary serves the city of La Crosse, having a population in excess of 37,000. In Illinois another subsidiary serves Park Ridge and Desplaines and several towns in central Illinois, the principal of which are Pekin and Havana. Other company subsidiaries operate in excess of 31,000 stations in Ohio, serving the cities of Warren, Wooster, Mt.

Vernon and about 40 other communities.

Gross earnings of the company, including other income for the 12 months ended June 30, 1929, were $1,821,565; operating expenses, maintenance and taxes, interest and dividends on subsidiaries, outstanding securities and minority interest in net income, $1,403,935, leaving $417,630 for net earnings before depreciation. The balance after interest on the company's funded debt, was $379,130; depreciation and estimated federal taxes, $174,915, leaving $204,215 as balance available for class A common stock.

The net earnings, it is stated, are 2.33 times the annual dividend requirements on this issue. The combined charge for maintenance and depreciation is equal to 25 per cent of the gross operating revenue.

W. S. Green of Pekin, Ill., is secretary of the Middle Western Telephone Co.

Mid-West States Utilities Co. Issues Gold Notes.

Six per cent convertible gold notes to the amount of $1,200,000 were announced for sale recently by the Mid-West States Utilities Co. The price quoted was 98¼ and interest, yielding over 7 per cent. E. H. Ottman & Co. are marketing the issue.

The Mid-West company and its subsidiaries furnish electric power and telephone service in important communities in Illinois, Wisconsin, Arkansas, Oklahoma and Texas. The total population in the areas served by the telephone properties is estimated to be 195,000.

Gross earnings of the company for the 12 months ended March 31, 1929, were $772,692.40; operating expenses, maintenance and taxes, $429,444.62, leaving a balance of $343,247.78. Deducting prior charges of $108,520 leaves a balance of $234,727.78. Annual interest requirements on this issue are $72,000, leaving a balance available for reserves and dividends of $162,727.78.

The balance available for annual interest charges on this issue of notes, it is stated, equals such interest charges 3.25 times and after such interest is equivalent to $8.13 for each share class A stock outstanding.

A. T. & T. Stock Reaches Another New High at 310¼.

Without any supporting rumors, American Telephone & Telegraph Co. shares on September 18 soared 14 points above the closing price of the preceding day, to a new high of 307½. At this level the 13,161,761 shares outstanding on July 1 were worth $4,047,241,500. Only once before has the stock crossed the four billion dollar mark and then only by $1,248,000, a few weeks ago.

At its new record A. T. & T. stock stood at the highest mark ever attained by the capital issue of any American company, with the single exception of General Motors. At its year's high of 91¾, General Motors common stock was worth $3,991,125,000, while at the same date all General Motors stock, including preferred issues, were worth $4,159,000,000, approximately. A. T. & T. has no preferred issues.

Closing at 304, with a net gain of 10½ points, A. T. & T. stock showed an appreciation in market value of $138,198,500, one of its largest gains in a single day this year. The value of the stock at the high on September 18 was more than $1,500,000,000 over its low for the year, 193¼, which was made on a smaller outstanding issue.

On September 19 the stock reached another new high of 310¼ and closed at 304. Since then it has been traded in at lower levels. On September 24 its high was 303¾ and it closed at 292⅝.

With prospects of stock dividends or bonuses of any sort ruled out by the drastic policy of the company, frequently pronounced to confound rumor merchants in Wall street, New York, the only reason ascribed for the renewed buying of shares lies in the great earning prospects of the company, the faint possibility that its policy may be amended at some future time to permit a split-up without increasing the dividend or disturbing equities, and the magnetic effect of the convertible bonds exchangeable into stock for eight years from January 1 next.

Bell Calls Increase and Revenues Decrease in Maryland.

Net additions to plant of $1,908,062 were made by the Chesapeake & Potomac Telephone Co. of Baltimore City in Maryland during the year ending July 31, according to the report of operations filed with the Maryland Public Service Commission. The net additions for the first seven months of the year amounted to $1,139,341. Gross additions for that period were $2,393,450, with retirements of $1,254,109.

The value of the telephone company's property in the state of Maryland, as fixed by the public service commission as of December 31, 1924, plus additions since that date, was on July 31, $43,596,173.

Telephone operating revenues for the first seven months of this year were $7,840,698. Operating expenses for this period were $6,203,594, making a net operating revenue for the seven months of $1,637,104.

Operating revenue for the 12 months ending July 31 were $13,269,536. Expenses for this period were $10,510,300, making net operating revenues for the 12 months $2,759,227, which is equivalent to 6.43 per cent on the average value of the company's property for the year.

Taxes assignable to operations for the 12 months ending July 31 amounted to $1,331,050. Taxes assignable to operations in July were $107,521.

Telephone operating revenues for July were $1,119,411. Telephone operating expenses for this period were $902,872, making net operating revenues $216,539, which was a decrease of $9,995 from the month of June.

On July 31, Maryland was served by 203,389 telephones, an increase of 5,590 since January 1. Telephone users in the state during this month made 24,300,000 local and 1,569,000 out of town calls, which was an increase of 6.3 per cent in local and 12.9 per cent in toll calls over the same month last year.

Current Price Quotations on Listed Telephone Stocks.

	September 21		
	High.	Low.	Last.
American Telephone & Telegraph Co. (9)	302½	297	298¾
Associated Telephone & Telegraph Co. (A)	62⅞	61	61¾
Associated Telephone Utilities Co.	41¼	40½	41
Chesapeake & Potomac Telephone Co.	116¼	116¼	116¼
Cincinnati & Suburban Bell Telephone Co. (4½)	126¾	126¾	126¾
Community Telephone Co.	29¾	27½	29¾
International Telephone & Telegraph Corp.	133¼	131⅛	133
Middle Western Telephone Co.	28⅝	27	28½
New York Telephone Co., pfd. (6½)	113⅞	113	113⅞
Pacific Telephone & Telegraph Co.	206	206	206
Union Telephone Co.	27½	26	27
Western Continental Utilities, Inc.	24½	22½	24½
Western Power, Light & Telephone Co.	30½	30	30½

OVER THE COUNTER QUOTATIONS.

	Sept.21. Bid.	Sept.21. Asked.	Sept.20. Bid.
Associated Telephone & Telegraph Co., pf. (7)	102	105	102
Associated Telephone & Telegraph Co. (D), (4)	53	56	53
Associated Telephone Utilities Co., pf. (6)	88	..	..
Associated Telephone Utilities Co., pf. (7)	98	..	..
Bell Telephone Co. of Canada (8)	164	168	164
Bell Telephone Co. of Pennsylvania (6.50)	114	117	114
Cuban Telephone Co. (8)	135	..	135
Cuban Telephone Co., pf. (7)	107	112	107
Lincoln Telephone & Telegraph Co. (8)	125	..	125
Diversified Investments, Inc., pf. (7)	100	103	100
Mountain States Telephone & Telegraph Co. (8)	157	159	157
New England Telephone & Telegraph Co. (8)	164	168	164
Ohio Bell Telephone Co.	112	..	112
Peninsular Telephone Co. (7)	125	..	125
Peninsular Telephone Co., pf., A (7)	103	104½	103
Porto Rico Telephone Co. (8)	85	..	85
Porto Rico Telephone Co., pf. (8)	100	..	100
Rochester Telephone Corp., 1st pf. (6.50)	105	108	105
Southern Bell Telephone & Telegraph Co., pf. (7)	116	119	116
Southern New England Telephone & Telegraph Co. (8)	209	215	209

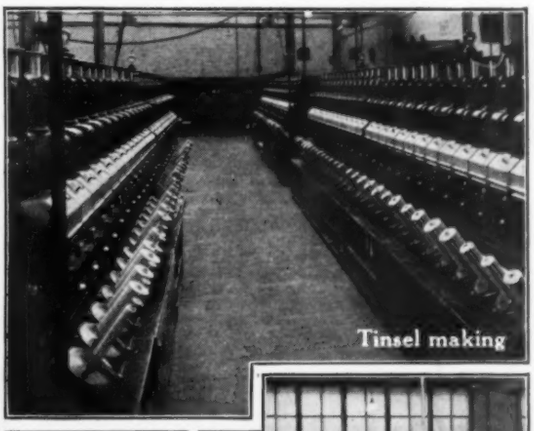
Lincoln, Neb., Company Six-Month Report Shows Increase.

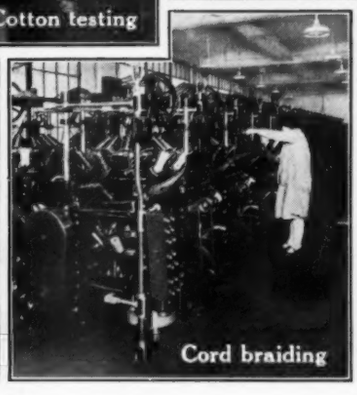
The report of the Lincoln Telephone & Telegraph Co., filed with the Nebraska State Railway Commission and covering the first six months of the year's operation, shows a substantial increase in both toll and revenues, the former being larger than the latter.

Exchange revenues for the period were $1,035,294, toll $501,138 and miscellaneous, $30,840, a total of $1,507,212. Exchange

Only a telephone cord..

... but see what's behind it!





JUST a few feet of insulated wire leading from your telephone to the bell-box—but back of it is a long story of careful workmanship and alert inspection.

Cotton was grown and silk was spun to make that insulation. Wire was drawn into the finest tinsel, covered with the dyed threads, and twisted and braided. It was all done right, because the cord must be rugged enough to take a good many pinchings by desk drawers and still keep on playing its part in a telephone conversation.

This cord is a little thing. But it is just as important to good telephone service as is a fifty-position switchboard or a thousand mile cable. And Western Electric makes it with the same care.

Western Electric

MAKERS OF YOUR TELEPHONE

revenues were $41,212 greater than in the first half of 1928, and toll $54,808. With $840 of miscellaneous revenues increase, the total was $95,180.

Operating expenses increased $55,671, current maintenance $45,333, and depreciation charges, $19,244, a total increase of $120,244. Operating expenses were $526,-321; current maintenance, $311,123; depreciation, $334,294 and taxes, $96,064, practically the same. The total was $1,-267,802, leaving a net operating expense of $299,410, to which was added sundry net receipts of $22,152, making a total of $321,662 net income. Interest payments were $69,749, common stock dividends $131,131, and preferred stock dividends, $95,066, leaving $25,746 for surplus.

The average monthly revenue per station slightly increased. Total revenues to average plant in service, 27.95 per cent; operating expenses to revenues, 33.57 per cent; total expenses to revenues, 80.89 per cent; maintenance, 5.64 per cent; depreciation, 6.00 per cent; earnings to average plant in service, 5.43 per cent; net earnings of common, after preferred dividends has been paid, 9.59 per cent.

The company had an increase for the six months of 1,140 in stations, which now total 88,886, with 24,107 connecting stations. The average plant in service is $11,037,371. On July 31, the physical property was valued at $12,251,250, an increase of $501,879; investment of $410,399; cash and deposits of $366,404 and receivables of $477,327, making total assets $13,515,388, an increase for the half year of $674,524.

The capital stock outstanding is $6,795,-130; funded debt, $2,000,000; bills payable, $163,755; other payables, $637,472; depreciation reserve, 2,807,747; and surplus, $1,101,284.

Gold Notes of Federal Public Service Corp. Placed on Sale.

Three-year convertible 6 per cent gold notes to the amount of $4,000,000 were recently placed on sale by the Federal Public Service Corp., of which Perry O. Crawford is president. The notes are dated July 1, 1929, and due July 1, 1932. The issue price is 97¼ and interest, yielding over 7 per cent. H. M. Byllesby & Co., E. H. Rollins & Sons and Bartlett & Gordon, Inc., are marketing the issue.

The Federal Public Service Corp. furnishes, through its subsidiary companies, electric light and power, gas, telephone service and steam heating, ice or cold storage service in important and prosperous sections of the country. The telephone properties are located in Illinois, West Virginia and Virginia. A total of 167 communities, located in 13 states, having a combined estimated total population in excess of 550,500, is served. The subsidiary companies serve a total of 55,000 customers.

Gross earnings of the company for the 12 months ended April 30, 1929, and, as to certain subsidiaries for the 12 months ended March 31 (excluding non-recurring charges of $168,684 and interest and dividend charges on funded debt, preferred and common stocks, were $3,030,253; operating expenses, including maintenance and charges on subsidiary securities, but before depreciation and federal income taxes, $1,-759,310, leaving a balance of $1,270,943.

Deducting annual interest requirement on $9,000,000 first lien gold bonds, 6 per cent series of 1927, amounting to $540,000 leaves a balance of $730,943. This balance, it is stated, is in excess of 3.04 times the annual interest requirement of $240,000 on the company's $4,000,000 three-year convertible 6 per cent gold notes, due July 1, 1932, outstanding.

Company at Ashland, Ky., Shows Slight Increase in Net Earnings.

Ashland Home Telephone Co., Ashland, Ky., a subsidiary of Standard Public Service Co., Columbus, Ohio, in its report for the 12-month period ended July 31, 1929, shows a gross of $243,776, compared with $228,642 for the preceding 12-month period. The net earnings before interest deductions were $120,437 as against a net of $119,555 for the same period last year.

With the Manufacturers and Jobbers

Ohio Representative of Creosoting Department of Brown & Sons.

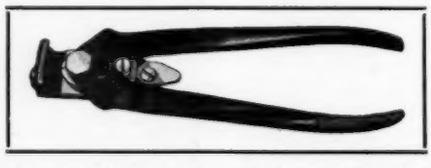
Allen C. Winston, formerly of the Western Electric Co., is now a representative of the creosoting department of the W. P. Brown & Sons Lumber Co., in the Ohio territory, with headquarters at Louisville, Ky.

The W. P. Brown & Sons Lumber Co. is known as one of the largest of pole producers, having some of the largest holdings of Southern yellow pine in the country.

Telkor Armor Cutter for Flexible Electrical Cable.

Several years ago a flexible armored cable was produced. Since that time it has become quite universally used in the wiring of buildings, ships, and other places where electricity is used for power or light. This cable is available in varying numbers and sizes of conductors and serves to embody most features desirable for convenient handling, quick installation, flexibility, serviceable wiring, etc., but it has one most important detrimental characteristic—that of its cutting and stripping.

Its most desirable feature for installation is its flexibility, which is an undesirable one when it comes to the cutting and removal of a portion of the metallic sheath. To date the common practice is



The New Telkor Armor Cutter for Flexible Metallic Armored Cable.

to hold the cable in one hand and saw through the sheath with the other.

In order that one convolution only of the armor be severed, the saw cut must be held to a particular angle to that of the cable proper, and caution must be taken as to the depth of the cut. Owing to the flexible nature of the material to be cut, plus the requirements as to depth and angle of cut, it becomes a very painstaking job under the best conditions.

With a knowledge of the composition and use of flexible armored cable as roughly outlined, a cutter has been produced that is universal for common sizes of cables. It makes a clean cut of one section of the metal armor strip, leaving a finished end on the cable, the undesired portion of the armor being removed with a slight twist. The cable is tightly clamped while the armor is being cut, and the clamping and cutting is combined in one action. The cable is always centered with that of the cutter blades.

The blades are readily replaced, and the cutting end of the tool is compact and small so that it can be inserted in restricted corners or spaces. The cutting is done with but one motion; the small strip or ribbon sheared out by the blades is rolled outward and away from the cable core. The friction, weight and overall size of the tool are held down to a minimum.

This cutter is designed with a combination of mechanical motions made possible through the relation of the associated parts to accomplish the gripping and cutting of armor in successful manner. The cutter blades are shaped and ground to size, and are universally interchangeable. The construction of the tool is such that the depreciation with use will be very slow.

Of all the parts embodied in the cutter, only the cutting blades will require replacing over a long period. The blades are readily changed by removing the cap screw in the main tie bolt through the

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Exide Chloride Battery Cell Type FMGO, 480 ampere hour capacity for dependable telephone service.

THESE are the reasons for Exide superiority in the telephone field:—

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Small wonder that Exides have been serving the telephone industry for over 35 years

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Exide BATTERIES

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Exide Batteries of Canada, Limited, Toronto

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The pure zinc coating on *Crapo* Galvanized Telephone Wire and Strand is *non-peeling, non-cracking.* Even when subjected to splicing, twisting or bending, this protective coating remains uninjured.

That is why *Crapo* Galvanized Products are outlasting all others in actual service. That is why users, year after year, are reducing maintenance costs to new low levels....

Crapo Galvanized Telephone Wire and Strand can be obtained from representative Jobbers. Insist upon *Crapo* quality! You can identify it by the *Crapo* Tag....

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TELERING

For Central Office and PBX Ringing

ONE REED!

ONE CONTACT!

IDEAL WAVE FORM

ORDER ONE ON TRIAL.

NO OBLIGATION TO KEEP

Fully Guaranteed

Converts 60 Cycle Lighting Current to 20 Cycle Ringing Current.

POSITIVELY NO RADIO INTERFERENCE

Very low current consumption.

Model EX-3 has been proven the ideal ringing machine by hundreds of satisfied users.

Price $44.00 — F. O. B. Elyria
IT PAYS FOR ITSELF

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Telkor, Inc., Elyria, Ohio

(Write for booklet)

handles and blades and inserting a new pair of blades in recesses in the handles.

As has been noted, the end of the cable armor, after being cut, is in a finished condition and ready for a terminal or coupling. The snap action of the spring and several parts lend to the accurate positioning and functioning of the tool.

Complete information regarding this new tool may be obtained by those interested upon application to Telkor, Inc., Elyria, Ohio.

Lyon Metal Products in New Building in Los Angeles, Calif.

Lyon Metal Products, Inc., of Aurora, Ill., has just completed its new western assembly plant and warehouse at 3650 Union Pacific avenue, Los Angeles, Calif.

The building occupies a total of 18,000 square feet, and room for future expansion is provided.

Faster service to the West Coast telephone industry in furnishing specially-designed steel storage equipment for exchanges, offices, maintenance storerooms and service departments will result from this expansion.

Vitrified Clay Conduit Made Flexible as Conditions Require.

For the first time vitrified underground clay conduit has been made flexible by the introduction of the new Natco slant or mitered conduit for curved construction. The Illinois Bell Telephone Co. at Gary, Ind., had the problem of converting two main duct runs (each two ducts wide and 15 deep) into three branch runs (each two ducts wide and ten deep), and to change the direction 90 degrees to enter its exchange building.

The old method of building a large expensive manhole, with the costly splicing and training of 60 cables was eliminated by means of curved duct lines constructed of the Natco slant or mitered conduit, as shown in the diagram and pictures.

This new shape introduced and manufactured by the National Fire Proofing Co. of Pittsburgh, Pa., offers a simple and inexpensive method of constructing perfect curves of any radii both in vertical and horizontal planes, thus providing a means of saving extensive manhole construction and costly cable splicing.

Syrian System Operated Military Branch of Government.

The Syrian telephone system has always been a military one, and following a reorganization of the French army, which has reduced the personnel and hence made more difficult the operation of the telephone system, a special expert was brought from France to appraise the existing equipment with a view to selling it to the local governments.

The system as conducted at present has been neither adequate nor satisfactory from a civilian point of view, and it is believed that the operation of the system by a civilian company or even by the local governments might increase its efficiency.

Automotive Equipment Only on Telephone Construction Project.

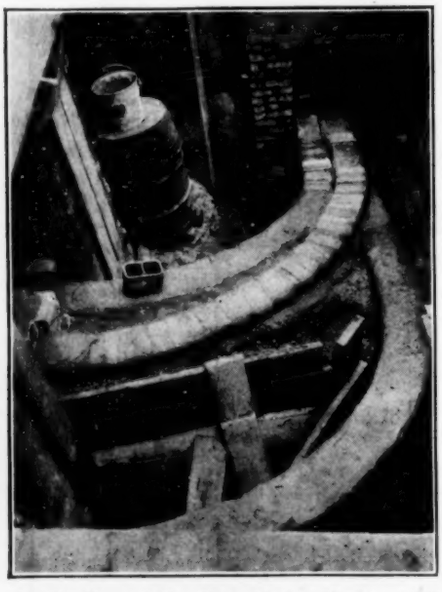
One of the largest construction enterprises of its kind—that of the Pacific Telephone & Telegraph Co. in extending its long distance lines from Barstow, Cal., to Las Vegas, Nev.—is being done wholly without the aid of other than automotive equipment. The region is entirely arid and the project involves an expenditure of $826,000, according to telephone company officials.

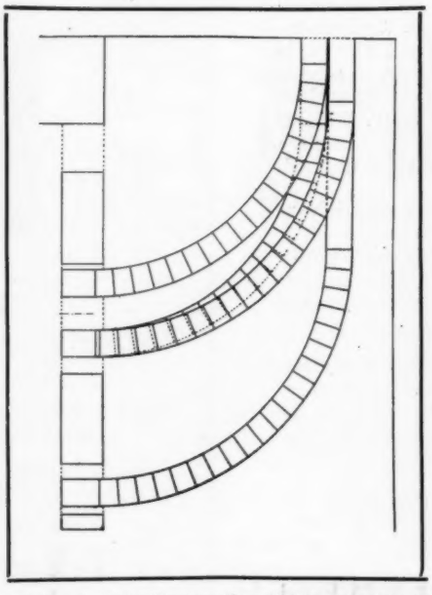
New Western Assembly Plant and Warehouse in Los Angeles, Calif., of Lyon Metal Products, Inc., Which Has Its Main Offices in Aurora, Ill.

An eight-car construction train, made up of cars devoted to sleeping, recreation, dining, commissary, supplies and equipment of every description moves along at the rate of two miles a day and serves as headquarters for all purposes. The train carries its own electric light and electric refrigeration plants.

The telephone line follows the route of the Arrowhead trail and Union Pacific railroad. Perhaps the most unique feature is the total absence of draft animals of any sort, all of the work being done with motorized equipment.

The principal burden-bearers of the fleet are five six-wheel, dual-drive trucks. The trucks transport poles, wire, and all





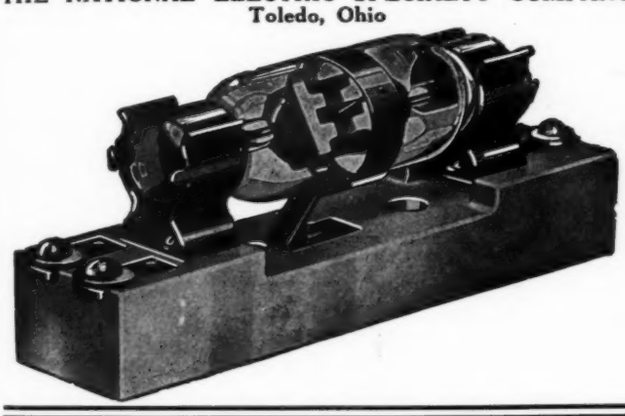
Application of the New Natco Slant or Mitered Conduit in Connection With Curved Duct Lines at Exchange Building of Illinois Bell Telephone Co., Gary, Ind.

VAC-Ms
the sponsor of
PROTECTION

There has been a decided tendency in recent years for telephone companies to use VAC-M arresters. There is a reason for this:—VAC-Ms protect service, operators and equipment from lightning, sneak currents and static. The initial cost of VAC-Ms is the only cost.

If you haven't protected your property with VAC-Ms your immediate investigation of them is warranted. They will render you the finest and most reliable protection obtainable.

THE NATIONAL ELECTRIC SPECIALTY COMPANY
Toledo, Ohio



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Supreme in Every Test

"BAG TYPE" DRY CELLS
are recognized by
Leading Telephone Engineers
as the only dry cell for
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For convenience in transporting batteries to your stations and for facilitating installation, we recommend the BRIGHT STAR handy package of 3 at no extra cost.

We guarantee these Dry Cell Telephone Batteries to *outlast any competitive dry cells of their size.*

We supply over 500 Independent Telephone Companies in this country. Telephone engineers are invited to write for a sample cell for test.

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Manhole Ventilation
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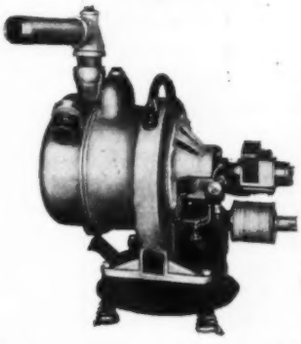
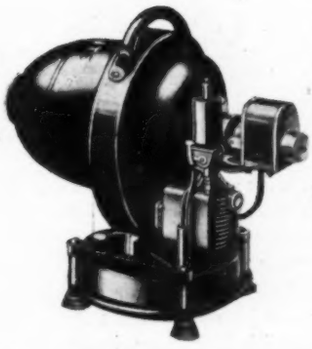
Portable by one hand.
Weighs 75 lbs.
Capacity up to 2000 cu. ft. of air per minute.
Powered by built-in Homelite air cooled gasoline engine.
Measures 21″ x 23″ x 16″.

Pumping
Portable Self Priming Centrifugal Pump



Portable by one hand.
Weighs less than 100 lbs.
Capacity up to 6,000 gals. per hr.
Volume and Seepage. No foot valve.
Built-in Homelite air-cooled gasoline engine.

Electric Light and Power
Portable Generator and Power Plant



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Weighs 110 lbs.
Measures 21″ x 21″ x 14″.
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sorts of supplies from the base on the train to the point of use. The work to which they are subjected is said to be the most strenuous that could be devised. They have to function despite terrific heat, over trackless desert sands and frequently must negotiate very steep grades. The six-wheel dual-drive construction is said to be ideal to surmount the difficulties encountered.

The trucks are standing up under the ordeal in remarkably splendid manner, according to reports. A garage and repair shop is established each day and necessary conditioning of the motor equipment is carried on daily, quickly and expertly, without having to resort to the aid of various elaborate repair facilities.

What the Commissions Are Doing

Up-to-the-Minute News Regarding the Activities of State and Interstate Commissions, Courts and City Councils in Matters Concerning Telephone Companies—Summary of Commission Orders and Schedule of Telephone Hearings

Program Company Must Apply to Commission in Circuit Dispute.

The federal district court in the third judicial district at St. Paul, Minn., on September 6 ruled that a company seeking to compel a telephone company to furnish spare circuit facilities for its use in supplying programs over wires to speakers in homes of its subscribers must first apply to the commission for relief. Whether the telephone company was obliged to furnish such service was not decided.

The WiRaDio Service Co. of Minnesota sought a writ of mandamus to compel the Tri-State Telephone & Telegraph Co., of St. Paul, to furnish spare circuit facilities for its use in supplying "programs of entertainment and education over and upon wires to speakers installed in the homes or places of business of subscribers, from a central station or studio."

The telephone company moved to quash the alternative writ upon the ground that upon the pleadings it appeared that the court was without jurisdiction: (1) because the telephone company was not legally obliged to furnish or lease the facilities demanded against its will, and to require the same would deprive it of its property without due process and without compensation; and (2) if legally obligated, the court had no primary jurisdiction, since in such case petitioner must first apply to the Minnesota Railroad & Warehouse Commission for relief. The alternative writ was quashed by the court.

The court held that the questions involved could come before it only upon appeal from an order of the commission, or upon a petition for mandamus to enforce the commission's order.

The court said in part: "Respondent's counsel has argued with great ability the contention that the service demanded by the petitioner is not telephone service, and moreover is not any sort of service which respondent is obliged to furnish in its capacity of a public service corporation; it may, if it desire, furnish it in its private proprietary capacity, but it is not a public utility.

"This argument goes to the ultimate merits of the case; but the issue involved has not been presented to this court either by demurrer or motion, and I do not feel at liberty to pass upon it. Respondent's motion is restricted to the question of the court's jurisdiction."

Commission Refuses Capitalization of "Going Concern" Value.

In authorizing the Eel River & Southern Telephone Co., of Ferndale, Calif., to sell its properties to the Public Utilities California Corp, and the latter to issue $19,000 par value of common capital stock in payment therefor, the California Railroad Commission on September 19 emphasized its policy of refusing to permit the capitalization of "going concern" value.

After a hearing on the application of the purchasing company to acquire the properties in question and to issue $36,800 of common capital stock in payment therefor, the commission denied the application insofar as it involved the issue of $17,800 of common stock of the Public Utilities California Corp., holding that it is not warranted in allowing more than $19,000 of stock in payment for the properties.

Among the items of value claimed by the applicant was $5,000 for "going concern" value. The commission held that there is no evidence which warrants a departure from its policy not to recognize any "going concern" value in proceedings of this nature.

Bell Company Acquires Exchange of Louisville, Ky., Suburb.

The Southern Bell Telephone & Telegraph Co. was authorized by the Interstate Commerce Commission recently to take over the properties of the Fern Creek Telephone Co., Fern Creek, Ky., which serves 181 subscriber stations.

Fern Creek is an unincorporated village and is a suburb of Louisville, Ky. The Bell company has a number of subscriber stations connected with its Louisville exchange in the area served by the Fern Creek company, and some of the subscribers of the latter company are located in territory served by the Bell company. The Fern Creek exchange is wholly surrounded by operations of the Bell company.

Louisville is the trading center for persons living in Jefferson county, the commission found, and practically all subscribers of the Fern Creek company, living in that county, require Louisville service. While subscribers of the Fern Creek company have connection with the Bell company's Louisville exchange, such connection is subject to a toll charge for each call.

The rapid development of this suburban section makes necessary the installation of additional facilities, which the Bell company plans to provide. The proposed acquisition will result in the elimination of the toll charge to Louisville, and will give subscribers of the Fern Creek company a wider range of service than they now receive.

On May 28, 1929, the Bell company contracted to purchase the physical properties of the Fern Creek company, free from all liens or encumbrances, for $18,000, payable in cash. An appraisal made by one of the Bell company's engineers found the reproduction cost, present condition, of the properties to be retained in service to be $22,821.

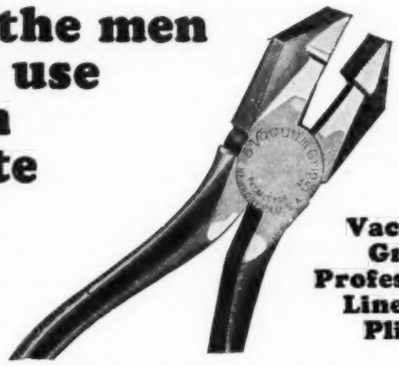
The estimated present value of properties to be retired from service is $6,749. In 1928 revenues and expenses of the Fern Creek company were $5,726.92 and $5,567.23, respectively.

Improved Service Expected When Bell Acquires Company.

The Michigan Bell Telephone Co. recently was granted its application by the Interstate Commerce Commission for permission to purchase the properties of the Leelanau Mutual Telephone Co., which owns an exchange at Northport, Mich., serving, as of December 31, 1928, 178 owned subscriber stations and 11 service stations.

On April 26, 1929, the Bell company contracted to purchase the properties of the Leelanau company, free from all liens and encumbrances, for $6,200. An appraisal made by one of the Bell company's engineers found the reproduction cost new of the properties to be $23,293, and less depreciation $8,179. None of the acquired properties will be retired from service. In 1928, operating revenues and operating expenses of the Leelanau company were $4,589.98, and $2,763.95, respectively.

. . if the men who use them wrote our ads!



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Buy a pair of these marvelously strong, long-life pliers—made of finest electric furnace alloy tool steel hardened *thru and thru,* NOT CASE HARDENED—and learn what a difference there is between ordinary pliers and pliers of super-quality.

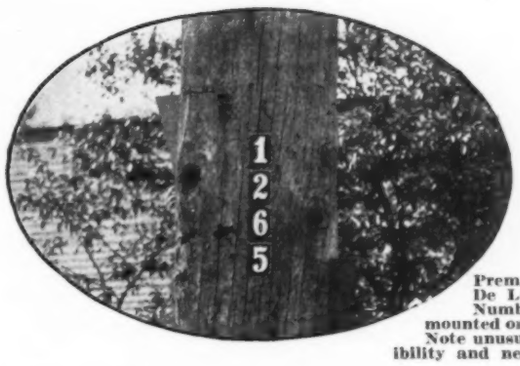
Purchasing Agts.—order samples for running tests. Catalog, showing over 40 patterns and sizes on request.

No. 58—8½", $3.50; No. 57—7", $2.75; No. 56—6", $2.25. Your name etched FREE on handle. We pay parcel post.

FORGED STEEL PRODUCTS CO., Newport, Penna.

Vacuum Grip REG. U.S. PAT. OFF **Pliers**

Built *UP* to a Standard—Not *DOWN* to a Price



Premax De Luxe Numbers mounted on wood Note unusual visibility and neatness.

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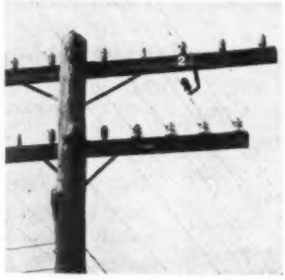

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The territory in which the Leelanau company operates has had a slow growth, the commission stated, but the summer resort development along Lake Michigan is now increasing rapidly, and as a result there is a greater demand for both local and toll service. The plant of the Leelanau company is not capable of meeting this increased demand, and the company is not able financially to make the investment required to reconstruct its plant and therefore wishes to dispose of its properties.

The Bell company, upon acquiring the properties, will rehabilitate the exchange, and provide such plant and equipment as may be necessary to give this community first-class commercial telephone service.

Michigan Bell Acquires Property of Walled Lake Company.

The Michigan Bell Telephone Co. was recently authorized by the Interstate Commerce Commission to acquire the properties of the Walled Lake Home Telephone Co., Walled Lake, Mich., which serves 288 subscribers' stations.

The territory served by the Walled Lake company has been developing recently, the commission found, and the plant of the company is not capable of meeting the increased demand for service. Since the company is unable to finance the additions to plant and equipment necessary to care for the increased business, the Bell company agreed to take it over and provide additional plant to take care of the service.

The Bell company proposes to purchase the physical properties of the Home company, free from all liens and encumbrances, of $25,000. An appraisal made by one of the engineers of the Bell company found the reproduction cost new of the properties to be $29,852, and less depreciation, $22,719.

None of the acquired properties will be retired from service. In 1928, operating revenues and operating expenses of the Home company were $8,670.12 and $7,128.60, resepectively.

Tri-State Company Offers Commission Informal Inventory.

Offer to make an informal check of the Tri-State Telephone & Telegraph Co. properties was made to the Minnesota Railroad & Warehouse Commission on September 12. Company officials asked the commission to dismiss or modify its order to them to show cause on October 8 why its rates should not be reduced.

C. B. Randall, vice-president and general counsel of the Tri-State company, told the commission that the company would agree to an informal check, and stated that between $160,000 and $200,000 could be saved for both the company and the commission.

He claimed that the inventory would enable the commission to ascertain whether a complete valuation should be made, and said he felt that the informal check would show that such an evaluation, necessitating a large cost, would be unnecessary.

Direct Toll Service Preferred Over Poor "Free" Service.

Railway Commissioner Miller, of Nebraska, journeyed recently to Greeley to iron out a situation that promised some difficulties. Greeley and Spalding are nearby towns that have been given free connections, although one is served by the Continental Telephone Co. and the other by the Northwestern Bell Telephone Co. The service is grounded type, and as the transmission lines have multiplied in that section, the quality of the service has lessened until the citizens made complaint to the railway commission and demanded metallic line construction.

Both of the companies replied that they would be very glad to accommodate the people, but that this would mean rebuilding of the connecting lines, and also require the placing of its operation on a toll basis. This was not so good, and a hearing was demanded. This developed that the business interests of the two towns were more concerned with a direct, prompt service than they were with a toll charge, and a rerouting of calls is expected to solve the problem.

Standing Rates and Regulations and Improving Service.

The Lincoln Telegraph & Telephone Co. has asked the Nebraska State Railway Commission for authority to put into effect the usual net and gross rates at its newly-acquired property at Burchard, with a 25-cent-a-month spread between prompt-payers and laggards. In the past the patrons have been paying quarterly.

The company has also asked authority to substitute metallic for grounded service at the exchange at Union, recently purchased. This is in accord with its policy of getting rid, where possible, of the old type of service now made almost unworkable through the increase in the number of electric power transmission lines. It is finding ready acquiescence on the part of the people, who have tired of poor service. The new rates asked at Union are the same as at other small exchanges, $3.00 a month for business, $2 for individual residence and $1.75 for two-party residence.

The company has been given authority to put into effect at its Davenport exchange the standard switching rate of $6 a year, under an arrangement by which it will pay an attachment rental for the poles of the farm line companies that it uses.

Farmers Want Desk Sets Instead of Wall Telephones.

As indicating the changed attitude of the farmers towards the larger telephone companies and, as well, the improved condition of agriculture in Nebraska, 25 cents a month means nothing to the rural patrons. This is evidenced by the fact that the Northwestern Bell Telephone Co., under pressure of demand from farmers for better instruments more conveniently located, has asked and been given authority by the state railway commission to offer desk set service on all rural lines, at the customary rate of 25 cents a month additional. This offer will be made to rural patrons on all lines.

The company was also given authority to make an installation charge of $12 for colored handsets. This is in response to a demand from the city patrons for handsets of varying colors with cords and equipment to match. The commission found that in view of the fact that this would cover all charges, it was a reasonable allowance.

New Jersey Bell Takes Tax Case to Federal Supreme Court.

The New Jersey Bell Telephone Co. has gone to the United States Supreme Court in its effort to restrain the state of New Jersey from collecting $1,058,997 in taxes. The court is expected to determine, when it convenes in October, whether it has jurisdiction in the case.

The company seeks to have set aside as unconstitutional one of New Jersey's tax statutes. It contends the New Jersey Board of Taxes and Assessments has assessed a tax against interstate as well as intrastate messages and that such a tax is invalid under Article 1 and the 14th amendment of the federal Constitution. The company has no objection to paying taxes on its business within the state.

The judgment sought to be reviewed was entered May 22, 1929, by the New Jersey Court of Errors and Appeals, the state's highest tribunal.

The case is being watched with interest because if the state court is reversed, a long series of suits looms, since numerous companies engaged in interstate and intrastate business have been taxed on their total receipts. Millions of dollars might have to be refunded by the state and millions in taxes on which the state budget has been calculated would not be forthcoming for meeting the expenses.

Summary of Commission Rulings and Schedule of Hearings.

INTERSTATE COMMERCE COMMISSION.

September 12: Application approved of Southern Bell Telephone & Telegraph Co. for certificate authorizing purchase of the properties of the Fern Creek Telephone Co., Fern Creek, Ky., which serves 181 subscriber stations.

ALABAMA.

September 12: Southern Bell Telephone & Telegraph Co. authorized to purchase the Uniontown Telephone Co. and the Parrish Telephone Co. The company at Uniontown was purchased from B. F. Hatch and the Parrish company from R. C. Corr.

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CALIFORNIA.

September 19: The Pacific Telephone & Telegraph Co. authorized to exchange 315 shares of the capital stock of Santa Monica Bay Telephone Co., and 1,689 shares of the capital stock of Associated Telephone Co. for the sum of $408,986, payable in stock of Associated Telephone Co., Ltd., to the amount of $298,218 in stock of the latter company (12,966 shares, without par value, at a price of $23 per share), and the balance of $110,768 in cash.

September 19: Eel River & Southern Telephone Co., Ferndale, authorized to sell its properties to the Public Utilities California Corp. Latter company authorized to issue $19,000 par value common stock in payment thereof. Application asked for issuance of $36,800 of common stock.

September 25: Hearing at Roseville in investigation instituted by commission into the rates and operations of Roseville Telephone Co., as the result of its hearing on its order to that company to show cause why its rates should not be investigated because of excessive earnings.

September 27: Hearing at Westminster in the matter of installing a separate exchange for Westminster and neighboring communities, with an automatic system of dial control.

ILLINOIS.

September 17: Hearing at Springfield before Chairman Hadley in the matter of the proposed advance in rates for service of the Illinois Bell Telephone Co. in Edwardsville, Madison county, stated in rate schedule Ill. C. C. No. 3 filed by the company.

September 17: Hearing before Commissioner Brinkman in the matter of the proposed advance in rates for service of the C. T. & N. Telephone Co. in Neoga, Cumberland county, stated in rate schedule Ill. C. C. No. 2 filed by the company.

September 18: Hearing at Springfield before Commissioner Brinkman in the matter of the proposed advance in rates for toll service of the Deer Creek Telephone Co. in and from Deer Creek to Washington, Mackinaw and Morton, stated in rate schedule Ill. C. C. No. 2 filed by Deer Creek Telephone Co.

September 19: Hearing at Springfield before Commissioner Wilson in the matter of the proposed rules, regulations and conditions of telephone service of the Hoopeston Telephone Co. in Hoopeston and vicinity, stated in rate schedule Ill. C. C. 2 sheet 4, rendered by the Hoopeston company.

September 19: Hearing at Springfield before Chairman Hadley in the matter of the proposed advance in rates for service of the Illinois Northern Telephone Co. in Macomb, McDonough county, stated in rate schedule Ill. C. C. 2 filed by the Illinois Northern Telephone Co.

September 19: Hearing at Springfield before Commissioner Kuhn in the matter of the proposed rates for hand set telephone service of the Wabash Valley Telephone Co. stated in rate schedules Ill. C. C. 2, revised sheet 6 for Paris and Ill. C. C. 1, revised sheet 7 for Marshall rendered by the Wabash Valley Telephone Co.

September 24: Hearing before Commissioner Gilbert in the matter of the petition of the Tri-County Mutual Telephone Co. to enter into a lease and contract with E. T. Sallee, covering the management and operation of its telephone property in the state of Illinois (Ogle county) for a period of 20 years.

September 24: Hearing at Chicago in the matter of the proposed advance in rates for service of the Illinois Commercial Telephone Co. in Belvidere and Garden Prairie, stated in rate schedule Ill. C. C. No. 2 filed by the company.

September 25: Hearing in the matter of the complaint of the city of Marengo relative to service of the McHenry County Telephone Co. in the city of Marengo.

September 26: Hearing in the matter of the application by the Illinois Bell Telephone Co. to authorize rental of floor space in the Illinois Bell's exchange building located at 25 North Walnut street in Danville, to the American Telephone & Telegraph Co. from May 1, 1928, to April 30, 1931, and from year to year for two additional years, at an annual rental of $13,718.59.

INDIANA.

October 8: Hearing at Delphi in the matter of a petition recently filed by the Flora Telephone Co. for adjustment of rates.

September 12: Petition filed by Hendricks County Telephone Co. for authority to acquire telephone properties at Clayton, Hazelwood and Stilesville. The properties are owned jointly by O. E. Brown and C. O. Beers, and assessed at $40,000. The company asks authority to issue $20,000 in common stock to Mr. Brown and Mr. Beers.

KANSAS.

September 30: Hearing on application of D. S. Forbes, owner of the F. & M. Telephone Co. for a certificate of convenience and authority to transact the business of a telephone utility at Big Bow and Hickok.

September 30: Hearing on application of the Boicourt Mutual Telephone Co. for permission to sell its telephone plant and property at Boicourt to the Peoples Mutual Telephone Co.

September 30: Hearing on application of the Peoples Mutual Telephone Co., a corporation, for a certificate of convenience and authority to transact the business of a telephone utility at Boicourt.

September 30: Hearing on application of Charles S. Rood for a certificate of convenience and authority to transact the business of a public utility at Belvidere.

MINNESOTA.

October 9: Hearing at Anoka in the matter of the application of the Northwestern Bell Telephone Co. for approval of the extension of the base rate area for its Anoka exchange and the addition of new classes of service for patrons outside the base rate area.

October 21: Hearing at Cottonwood in the matter of the complaint of the Home Telephone Co., alleging invasion of territory and duplication of service by the Green Valley Rural Telephone Co.

October 24: Hearing at Two Harbors in the matter of the application of the Duluth & Iron Range Railroad Co. for authority to establish and place in effect a rate for rural multi-party telephone service at Two Harbors.

October 28: Hearing at Redwood Falls in the matter of the application of the Redwood Falls Electric Telephone Co. for authority to change its telephone rates at Redwood Falls. Hearing was set for June 13 and postponed for a period of approximately 30 days at the request of the petitioner.

MISSOURI.

September 7: Application filed by Southwestern Bell Telephone Co. asking permission to purchase the Scotia Telephone Co.'s exchanges at Mehville, Fenton, Oakville and Sappington, St. Louis county.

September 17: Southwestern Bell Telephone Co. filed application for permission to change the form of service in Bowling Green and increase telephone rates. The present magneto system would be changed to a common battery system.

September 20: Ozark Central Telephone Co. of St. Louis, granted authority to operate an exchange at Gainesville, county seat of Ozark county.

September 24: Hearing at Springfield on application of the Midwest Telephone Co. for increase in rates at Sarcoxie.

(*Please turn to page* 51.)

Condensed Telephone News

Companies Are Urgently Requested to Forward to Us Promptly News Concerning Construction, Rebuilding, Financing, Election of Officers, Sales and Purchases of Exchanges or Other Activities

Elections.

TROWBRIDGE, ILL.—All the old officers were reelected at a recent meeting of the stockholders of the Trowbridge Mutual Telephone Co., as was also Marion Kennedy, the blind switchboard operator, who is serving his 28th year with the company. The officers are: Bernard Wilson, president; Edward Duvall, vice-president; J. C. Quinn, secretary-treasurer. The directors are John Doll and Peter Behl.

Franchises.

MCINTIRE, IOWA—The people of McIntire recently voted 87-3 to grant a fran-

chise to the Riceville Telephone Co. for operation here, so it is probable that this town and vicinity will soon have telephone service again, after having been several years without it.

Whether McIntire will have an exchange of its own, or be served by party lines from Riceville, is still a question. If as many as 150 subscribers are secured in the McIntire vicinity, an exchange will be installed here.

Financial.

ST. LOUIS, MO.—The Southwestern Bell Telephone Co. has declared its regular quarterly dividend of $1.75 on preferred stock, payable October 1 to stock of record September 20.

Construction.

FULTON, ILL.—The Morrison Telephone Co. has put up a 1,000 foot cable on Ninth avenue in Fulton which will be put into service soon. The work of laying another toll circuit from Fulton to Morrison has also been completed and the circuit is now in service.

BOSTON, MASS.—At its regular monthly meeting on September 17, the executive committee of the New England Telephone & Telegraph Co. approved the expenditure of $3,102,743 for new construction and plant improvements necessary to meet the demand for service. Including this authorization, the total commitment of the company for plant expenditures this year is $34,398,325.

For Maine the appropriation is $152,285; New Hampshire, $71,850; Vermont, $63,747; Massachusetts, $2,683,115; Rhode Island, $131,746.

Of the amount just authorized $1,213,713 will be expended for central office equipment; $411,939 for toll lines; $148,144 for exchange lines; $41,197 for station equipment; $78,272 for land; $38,269 for buildings; and $1,171,209 to cover the total cost of hundreds of routine additions to plant in all parts of the company's territory during October.

JASPER, MO.—Construction of a new office building and lines of the Central West Missouri Telephone Co. is nearing completion here.

MOUNTAIN GROVE, MO.—The Central West Missouri Telephone Co., is ready to spend some $40,000 in the installation of a new common battery plant here if the citizens of Mountain Grove so desire, says J. C. White, manager of the company.

The installation of a new plant would necessitate a considerable raise in rates, but it will require only 200 signed applications for telephones at the new rates for the company to make this improvement.

BURNS, ORE.—During the past few months the Central Oregon Telephone Co. has made many improvements to its plant here, including new poles, crossarms, wiring and telephones in the city.

AGAR, S. D.—The Dakota Central Telephone Co. is constructing 11 miles of new lines here. This is a rural line and will accommodate 25 to 30 families.

Miscellaneous.

PORT ARTHUR, ONTARIO, CAN.—At the plebiscite on September 16 the proposal to install dial equipment in this city was voted down. There were 1,163 votes cast and 785 opposed the proposal which was favored by the management of the city's public service commission which operates the public owned system for the city.

FARMINGTON, ILL.—The Farmington Telephone Co. was one of the heaviest losers in the fire which swept a business block here September 15, with damage to its property and equipment estimated at $800. Three cables were burned out and

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SPARTA, ILL.—Ira C. Land of New Athens is the new manager of the Sparta Telephone Co., having been employed to succeed E. W. Hanrahan, who tendered his resignation recently. Mr. Land assumed his duties September 1 and will move to Sparta in the near future. He will be assisted in his work by A. H. Neil of Marissa.

CLAYTON, IND.—The Hendricks County Telephone Co., with exchanges at Clayton, Hazelwood and Stilesville, has been sold by E. E. Brown of Clayton to W. E. Pembleton of Princeton, N. J. Mr. Brown acquired the property ten years ago for $11,000 and it is reported the recent sale price was $35,000.

FOREST CITY, IOWA—Unable to negotiate privilege of switching all rural business, which the Farmers Switchboard company, as parent company for the mutual rural telephone lines in the district handled, the Iowa Union Telephone Co. recently served notice upon the rural lines that it would disconnect the trunk lines which gave the residents of this city access to the rural lines.

A special committee of the local Chamber of Commerce is attempting to effect a settlement to avoid curtailment of service between the rural districts and the city.

SEBREE, KY.—The exchange here of the Southern Bell Telephone & Telegraph Co., which has been located over the Sebree Deposit bank for 23 years, was moved recently to a new bungalow on the corner of Main and Church streets. Mrs. H. T. Thomas is manager for the company.

AURORA, NEB.—J. L. Evans, for many years manager of the Hamilton County Farmers Telephone Association, resigned his position at a special meeting of the board of directors held recently. The resignation became effective at the end of last month, and was accepted by the board.

George E. Funk, secretary-treasurer of the association was named by the board to take temporary managerial charge in the place of Mr. Evans, and he assumed his new duties at once.

Mr. Evans was one of the organizers of the telephone association and has been connected with it in some capacity almost since its founding.

NARROWS, VA.—The Chesapeake & Potomac Telephone Co. of Virginia, has acquired the Narrow Telephone Co., serving Narrows, Rich Creek, Glen Lyn, Lurich and other communities in Giles county.

FENNIMORE, WIS.—Stockholders of the Fennimore Telephone Co. have voted 131-4 not to sell the plant. Mr. Moffat and Fred Murray, Benton, have been in this vicinity optioning telephone stock.

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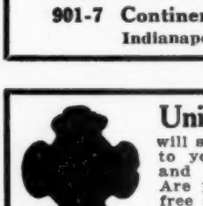
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WHAT THE COMMISSIONS ARE DOING.

(*Concluded from page* 48.)

NEBRASKA.

September 15: Hearing held at Greeley on application of patrons of the Northwestern Bell Telephone Co. and the Continental Telephone Co. for better connections with Greeley, involving a free service; testimony adduced and case taken under advisement.

September 18: Application filed by the Lincoln Telephone & Telegraph Co. for authority to include gross and net charges in schedule for Burchard exchange.

September 18: Application filed by the Lincoln Telephone & Telegraph Co. for authority to change the service at its Union exchange from grounded to metallic, and increase rates.

September 20: In the matter of the application of the Northwestern Bell Telephone Co. for authority to establish an installation charge of $12 for colored handsets; found to be reasonable and authority given.

September 20: In the matter of the application of the Lincoln Telephone & Telegraph Co. for authority to increase switching rates at its Davenport exchange; found reasonable and authority granted.

September 20: In the matter of the application of the Northwestern Bell Telephone company for authority to establish a rate of 25 cents a month for desk sets to rural patrons; found necessary for corporate purposes, reasonable and authority granted as asked.

OKLAHOMA.

September 20: Application filed by Medford Telephone Co. to sell and the Southwestern Bell Telephone Co. to buy and consolidate the telephone exchanges at Medford.

October 8: Hearing continued from September 5 in the matter of the complaint of the Southwestern Bell Telephone Co. vs. the Continental Telephone Co., alleging violation of commission orders.

October 15: Hearing in the matter of the Ketchum Hotel, Tulsa, vs. the Southwestern Bell Telephone Co. in which the hotel company is asking for authority to install its own P. B. X. board and fix rates for trunk lines, continued from September 16.

October 15: Hearing and investigation in connection with rules and regulations as to telephone service in Oklahoma, involving the question of whether hotel companies and other private interests which are not engaged in the telephone business should be allowed to own and control a portion of the equipment used in rendering telephone service.

OREGON.

September 27: Hearing at Beaverton on investigation of the charges, rules and regulations of the West Coast Telephone Co. This was ordered by the commission on September 6, the action being based on a complaint filed by O. B. Bennett and others at Beaverton.

WISCONSIN.

September 7: Complaint dismissed in the matter of the violation of provisions of section 196.50 by the Dekorra Farmers & Mutual Telephone Co.

September 11: Petition filed by O. G. U. Siljan, pastor of the Bethel Lutheran Church, asking that the Wisconsin Telephone Co. place the church in the charitable institution division.

No consistent classification is now used for churches by the utility throughout the state, the commission states, and this appeal may set a precedent. Lower rates are given charitable groups for telephone service.

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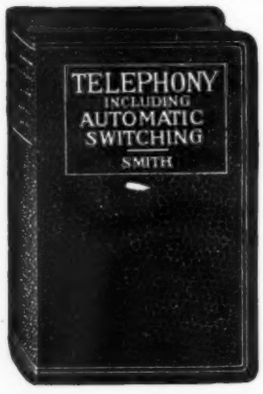

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